

DEQ RESPONSES TO
PUBLIC COMMENTS ON THE
DRAFT 2006 305(b)/303(d) WATER QUALITY ASSESSMENT
INTEGRATED REPORT



Water Quality Monitoring and Assessment Program

September 15, 2006

Chesapeake Bay Foundation

On behalf of the Chesapeake Bay Foundation (CBF), please accept this letter as formal comment regarding the Draft 2006 Water Quality Assessment 305(b) and 303(d) Integrated Report (“draft report”). We appreciate the opportunity to provide input to the Department of Environmental Quality (DEQ) regarding the draft report

We applaud DEQ’s significant efforts to compile this assessment of water quality conditions in the Commonwealth, and acknowledge the many improvements made to the listing and reporting process since the first integrated report was issued in 2004. This draft report reflects the first evaluation of the new Chesapeake Bay water quality criteria and designated uses, as well as consideration of enhanced monitoring data sources and analyses. We do, however, have some comments regarding DEQ’s listing methodologies, data collection and reporting, and public messaging of the draft report. The following three comments are provided for your consideration.

1. Water Clarify Criteria Assessment for Shallow-Water Designated Use

The draft report includes the first use of the new Chesapeake Bay water clarity criteria for the shallow-water designated use habitats. Determining attainment of this standard is achieved by assessing individual Bay segment goals for acres of mapped submerged aquatic vegetation (SAV) and percent-light-through-water (water clarity). The draft report stated that water clarity can not be assessed at this time due to insufficient data. Consequently, Virginia has proposed to list segments as Category 5 (Impaired) based on non-attainment of the SAV acres goal. CBF strongly supports this listing approach.

We believe DEQ’s listing methodology is consistent with Federal regulations and EPA’s policy of “Independent Application.” In particular, 40 CFR 130.7(b)(iii) requires states to identify water quality limited segments as those stream segments failing to comply with any quality standards including numeric criteria, narrative criteria, antidegradation, and designated uses. EPA’s policy of Independent Application affirms this interpretation by stating that biological, chemical, and toxicological methods “...can provide valid and independently sufficient evidence of aquatic life use impairment, irrespective of any evidence, or lack of it, derived from the other approaches... This policy, therefore states, that appropriate action should be taken when any one of the three types of assessments determines that the standard is not attained.”^a The SAV acre goal is a biological criterion; and therefore, non-attainment of this criterion correctly resulted in Category 5 listing for the segments in the draft report, regardless of the availability of water clarity data.

We are aware that Maryland has applied a different approach to assess attainment of the water clarity criteria in their 2006 303(d) report^b. In the absence of sufficient water clarity data, Maryland concluded that they had insufficient data for a listing decision, and therefore, all segments were listed as Category 3 (Insufficient Data). We believe Maryland’s approach is inappropriate, and reaffirm our support for the approach applied by DEQ in the draft report. Bay segments must be assessed based on the *best available data*—lack of data for both criteria is not

^a EPA, 1991, Memorandum from Tudor Davies to Water Management Division Directors on the Final Policy on Biological Assessments and Criteria. June 19, 1991

^b 2006 List of Impaired Surface Waters [303(d) List] and Integrated Assessment of Water Quality in Maryland.

a reason to preclude a listing decision. The approach chosen by the Commonwealth is the most proactive and protective of shallow-water resources.

Response

DEQ appreciates your support of the protocol used and agrees it is protective of the designated uses.

2. Collection and Analysis of Monitoring Data

CBF applauds DEQ for consideration of new criteria and data sources in the listing process for the draft report. In particular, application of the new Chesapeake Bay water quality criteria and designated uses, incorporation of estuarine benthic assessment and public beach data, and increased use of information from voluntary citizen monitors, has allowed DEQ to evaluate more waterways—from the main stem of the Chesapeake Bay to small headwater streams. However, while strides have been made, we believe that several areas needing improvement:

- DEQ must increase field monitoring significantly. For example, only 28% of stream miles (14,282 of 50,357 total miles) in the Commonwealth were assessed in the draft report. The percentage of streams evaluated in each report, and the percentage of streams receiving follow-up monitoring, must be increased if we are to clean up impaired waters.

Response

Although stream miles assessed are always less than a majority of total miles, DEQ assessed in 87% of 1246 sub-watersheds since 2002, and roughly 80% of sub-watersheds in the 2006 report alone. DEQ has developed a water monitoring strategy using a rotating watershed approach and will revise it in 2007, in order to assess in almost every sub-watershed in every assessment report by 2014 (with a data window of 2007 – 2012).

- DEQ must expedite collection of sufficient water clarity and chlorophyll *a* data to support a complete assessment in the 2008 integrated report of all Bay segments for all the new Chesapeake Bay water quality criteria and designated uses.

Response

DEQ is using all available resources, and working with the EPA Chesapeake Bay Program, to address the monitoring needs associated with the new Chesapeake Bay criteria.

- Data collected for the draft report should be made available to the public as close to real-time as possible. Public availability before issuance of the next report will help planning, regulatory, and restoration activities in the interim.

All data used in the assessment is available on the DEQ website at <http://www.deq.virginia.gov/watermonitoring/>.

- Adequate financial resources must be allocated to accomplish expansion of this monitoring effort. The draft report is a clear presentation of the significant financial commitment required by the state to improve water quality conditions.

Response

DEQ is always looking for additional resources and programmatic efficiencies to continue to expand our monitoring efforts.

Significant work went into the development of defensible, science-based water quality standards for the Chesapeake Bay and the rest of Virginia's waters. While the Chesapeake Bay Model and other modeled analyses are helpful, it is absolutely essential that the Commonwealth develop sufficient field data to definitively determine attainment with those standards.

Response

DEQ agrees and is looking to expand monitoring efforts within the Chesapeake Bay drainage.

3. DEQ Public Representation of Findings of the Draft Report

CBF must take issue with DEQ's public representation of the findings of the draft report to the public. Rather than deflecting public concern by framing the discussion as no imminent threat or emergency to human health while swimming or downplaying additional impaired waters as merely the result of increased monitoring, we suggest that DEQ acknowledge the seriousness of the water pollution crisis in the Chesapeake Bay and streams flowing through our local communities. The draft report can be a valuable tool for educating decision-makers and the general public on the urgent need to fund clean-up plans and restoration activities to ensure our waters provide not only opportunities for public recreation, but remain a source of safe drinking water and a balanced ecological community.

Response

DEQ has made a concerted effort to portray to the public water quality conditions as they currently exist. Each assessment cycle, DEQ goes through a public participation process defining the assessment methodologies to be used in the assessment. The results of those assessment methods are then presented to the public in an open manner to inform them about current water quality conditions.

Hampton Roads Planning District Commission

4. Submerged Aquatic Vegetation (SAV) Impairments: Many segments within the Chesapeake Bay were listed as impaired due to a failure to meet Chesapeake Bay Program (CBP) SAV acreage goals. The water quality criterion to protect and restore submerged aquatic vegetation requires assessment of both SAV acreage and water clarity acreage as measured by percent-light-through-water. As stated in the DEQ's current 303(d) listing guidance, the absence of SAV alone does not indicate water clarity impairment. If the water clarity acreage component of the criterion is met, then the segment is not considered impaired, regardless of SAV acreage. Water clarity acreage was not measured in any of the Chesapeake Bay segments. HRPDC supports the finding that the CBP acreage goals have not been met, however, without water

clarity measurements that would indicate whether a water body was truly impaired, the listings are premature and potentially inaccurate.

Until water clarity acreage can be assessed, the impairment listings for these segments should be replaced with an “Insufficient Data to Assess Criteria” designation. Emphasis should be placed on gathering sufficient data to assess this criterion for the 2008 Water Quality Assessment.

Response

DEQ has taken a proactive approach to SAV assessment. Water clarity data is not yet available but the fact remains that SAV growth does not meet the goals set forth in the new Chesapeake Bay criteria. Intense efforts are being made to collect the necessary water clarity data to confirm the cause for the lack of SAV growth. If it is determined that something other than water clarity is affecting the propagation and growth of SAV, DEQ will adjust accordingly.

5. Dissolved Oxygen Impairments: The majority of segments with the Chesapeake Bay watersheds were listed as impaired for dissolved oxygen based on the 30-day mean criterion. HRPDC is concerned that the monitoring was not conducted frequently enough to determine compliance with this standard. The frequency of DEQ monitoring data is generally once a month or once every two months. Unless data with more temporal frequency was utilized, this data is more conducive to determining compliance with the instantaneous standard.

The impairment listings for the 30-day mean DO should be replaced with “Insufficient Data to Assess Criteria” designation for all Chesapeake Bay waters, or these waters should be assessed based on the instantaneous DO standard. HRPDC also recommends significantly expanding the frequency of DO monitoring in the Bay watersheds in order to allow proper assessment of the 30-day mean DO standard.

Response

Funding for Chesapeake Bay monitoring and analysis has recently been increased and steps are being taken to collect the data necessary to assess all of the new Chesapeake Bay criteria.

6. Chesapeake Bay Assessment Segments: HRPDC agrees that the use of Chesapeake Bay Program segments provides comparability to the Chesapeake Bay Program and goals. Unfortunately, the use of these larger segments, particularly for assessing SAV acreage and DO, obscures the actual areas of impairment. The results of the use of these larger segments may be inconsequential in the open water segments of the Bay, but in the coastal areas can result in inaccurate representation of the specific areas that may be truly impaired. Not only does this artificially inflate the number of segments listed as impaired, but could result in inappropriate resource allocation during TMDL development and implementation.

In order to identify smaller and more meaningful stream impairments, consideration should be given to assessing the tidal creeks and sub-estuaries as separate segments. Consistent with previous methods, statistical analysis should be performed to determine which monitoring stations yield comparable results and can be grouped together for monitoring and assessment purposes.

Response

The newly adopted Chesapeake Bay Standards require the use of the Chesapeake Bay Program segmentation. The Bay segments share the same water through tidal interactions and therefore, share the same water quality.

County of Fairfax, Virginia

7. Impairment sources have been included in the draft report for aquatic plants. It is requested that DEQ provide the basis for the impairment source determination. As actual impairment sources have not been identified, it is respectfully requested that impairment sources be deleted from the draft report where they have not actually been identified as such.

Response

As a part of the original assessment, an attempt is made to identify possible sources of impairment. It is true that these sources have not been proven to be the source but based on professional judgment, a likely source, where possible, is identified.

Virginia Association of Municipal Wastewater Agencies, Inc

8. These comments are submitted on behalf of the Virginia Association of Municipal Wastewater Agencies, Inc. As you may know, VAMWA is an environmental organization representing approximately 55 Virginia publicly-owned providers of wastewater treatment services. VAMWA's members serve more than 95 percent of the sewered population of Virginia.

VAMWA's mission is the promotion of the quality of Virginia's waters in an effective and efficient manner. Consistent with that mission, we appreciate the substantial efforts that go into the Integrated Report every two years. We can see in this Report specific improvements over prior efforts. However, our members believe that much more needs to be done to make this effort focus on objective results. The Report states that there are now 1712 TMDLs statewide that the Department must develop based on the Report results. When we consider this number, the very substantial efforts that the Commonwealth has undertaken over the last several years in developing TMDLs, and the small number of TMDL Implementation Plans completed (13), we believe that the Department should consider alternate approaches to the Report and more generally to the impaired waters program.

This recommendation is also consistent with the 2006 Chesapeake Bay and Virginia Waters Clean-Up and Oversight Act (House Bill 1150). In the Clean-Up and Oversight Act the General Assembly stated its desire for all aspects of the impaired waters program to focus less on paperwork and unrealistic assessments and plans, and more on plans that will actually be implemented and on results. While we recognize that the Report is primarily to satisfy federal and Commonwealth reporting requirements, the Report drives a much larger part of the Department's total water quality efforts. This and future Integrated Reports should attempt to reduce the incentives to mechanically produce TMDLs that are unrealistic or non-implementable, and should instead focus on a smaller number of manageable projects with significant potential for real water quality improvement.

Response

The newly adopted HB 1150 will continue to focus on water quality improvement. It is the responsibility of DEQ to monitor state waters and report those results every even-numbered year. DEQ is also required to make the guidance procedures (assessment methodology) available to the public for comment. The assessment is based on these guidance procedures and the results reported accordingly.

Our more specific comments follow.

9. Estuarine Toxics Evaluation

We commend the Department for the Estuarine Toxics Evaluation provisions of the 2006 Assessment Guidance, which we assume the Department has closely followed in the estuarine listings and other decisions reflected in the Report. That evaluation uses a holistic “Sediment Quality Triad” weight-of-evidence approach that evaluates (1) chemical-specific data, (2) toxicity tests and (3) biological monitoring together to derive a scientifically-valid assessment of the risk of toxicity. Consistent with VAMWA’s earlier comments on the (earlier draft) Guidance, there is no legal basis for using the latter two data sources in any other way, and EPA’s longstanding “independent applicability” concept (which has no basis in law) should not be used as a reason for any approach other than one using weight-of-evidence.

However, consistent with our comments below, there is no valid basis to distinguish fresh water toxics evaluations. Accordingly, any use of toxicity tests or biological monitoring in fresh waters should take the same scientifically-valid weight-of-evidence approach.

Response

EPA has not abandoned their longstanding concept of “independent applicability” for appropriate environmental assessment methods and EPA requires a 305(b) assessment be made with the available information. Biological monitoring assessments have been used for decades independent of additional sediment toxicity or chemical specific data, because in many cases the adverse impact on the biological community may not be a result of chemical toxicity. The assessment of the biological monitoring data determines that there is impairment and this is the assessment required for the 305(b) report. The actual cause of the adverse effect on the biological community is determined during further study.

10. Increase in Listed Waters

As in prior Integrated Reports, there is a substantial increase in listed waters. An approximate 30 percent increase in impaired non-tidal river and stream miles is reported. Of course, much of this is due to additional data, changed criteria and lowering of PCB, mercury and other aquatic life thresholds. Also, much of the volume of the Report is due to bacterial contamination, the majority of which is from natural sources. These factors are frequently lost on those reading the Report or on news media covering the Report and covering the Department’s public meetings. Therefore, the Report and the Department’s announcements concerning the Report should more fully reflect these factors.

The acreage of listed impaired lakes has increased by approximately 22 percent, and much of the listed acreage is attributed to dissolved oxygen issues caused by natural stratification. Although we recognize the time period covered by this Report, the Report should recognize the new DO criteria for lakes and the impact the new criteria will have on future Reports to remove some of those listings.

Response

DEQ has developed a method, using the trophic state index, to determine if DO impairment in lakes is due to excess nutrient loadings or if the impairment is from natural causes. Many lake acres are listed as impaired for natural causes and have been included in Category 4C and not needing a TMDL. As for natural bacteria impairments, these take more in-depth study in order to determine the actual contributions to the excess bacteria from both animal and anthropogenic sources. These special studies take place when the TMDL is developed.

11. Use of Unpromulgated Criteria

One of VAMWA's comments on the 2006 Assessment Guidance was that it continued to use numeric benchmarks for interpreting ambient monitoring data when those benchmarks have not been promulgated or withstood the Administrative Process Act requirements. Examples of such benchmarks include sediment thresholds, BIBI values, reference sites, trend analyses and back-calculated (from adopted water quality standards) tissue values. The Integrated Report continues this practice. All such numeric benchmarks are being used in the listing process as if they were promulgated as water quality standards and are given equal weight to criteria that have been promulgated. This approach contradicts the reasons for having the APA promulgation procedures and weakens the impaired waters program. Also, this approach could be used as an example where benchmarks can be used in a regulatory framework without promulgation. Such values should be used to prompt further research, but VAMWA cannot agree with the use of such benchmarks to list waters as impaired and to trigger TMDL requirements.

Further, where there are established numeric criteria for a constituent, the APA effectively prohibits the use of other, replacement values. But, the Report states the opposite – “[if] the toxicological information on the chemical has been revised and the water quality criterion has not been updated . . . an updated fish tissue screening value is calculated and used to assess the data.” Report 2.1-11. Any such procedure is clearly in violation of the APA, and the Report and any listings or other impacts from that procedure should be corrected before the Report is finalized.

Although the Guidance does not use Total Phosphorus or *chlorophyll a* values for defining impairment, it should also not use such values for identifying “observed effects” for aquatic life. DEQ is in the process of developing through the APA process such criteria for non-tidal free flowing streams, and any further use of Total Phosphorus or *chlorophyll a* data should await that process.

Response

DEQ believes the methods used to assess water quality do not need to be subjected to the APA process due to the fact that the assessment report is not a regulatory action nor is it considered a case decision.

The intent of the 305(b) assessment is to assess the waters using the best and most recent scientific information available as well as take advantage of any existing regulatory benchmarks as may exist at the time of the assessment. The 305(b) assessment and the resulting 303(d) listings are not regulations and formal Administrative Process Act procedures are not required for each aspect of every scientific tool used in the 305(b) assessment. Nevertheless, the use of all the benchmarks used in the 305(b) report have been developed and revised after numerous opportunity for public participation and comments during the development of the 2002, 2004 and 2006 305(b) reports. Some of the numerical benchmarks used are regulatory in nature, such as the water quality standards and criteria and these have been adopted using the Administrative Process Act. Some of these water quality criteria are designed to protect the use of fish and shellfish for human consumption and the basis for these criteria are contaminant-specific fish-tissue concentration levels that are considered acceptable. The water quality criteria are back calculated to result in water column concentration that will protect against fish contamination above this level, not the other way round as the comment implies.

When a regulatory bench mark exists like a water quality criterion or the corresponding fish-tissue value, then that benchmark is used for assessment in preference to other benchmarks. However, in keeping with the intent to conduct the 305(b) assessment using the most recent and most valid information available, provisions are also made in the guidance to acknowledge instances where the scientific basis for a benchmark encoded in regulation has changed, but the corresponding regulation has not yet been updated. This is the example given in the comment regarding an updated fish tissue screening value. This guidance provision allows DEQ to use the most recent changes in the science to assess the data using both the existing regulatory based benchmark as well as an updated and more scientifically defensible benchmark. However, the regulatory benchmark will have precedence over the updated benchmark until the regulation (i.e. the water quality criterion) has been updated through the standard Administrative Process Act procedures and an updated fish tissue screening value will not result in an assessment of “impaired”. This guidance keeps the 305(b) assessment consistent with existing regulations but also allows the 305(b) report to acknowledge advances in science and keeps the report scientifically valid.

12. Toxicity Tests and Biological Assessments

Another comment that VAMWA made on the Assessment Guidance was that the Guidance states that waters are listed as impaired and require a TMDL only when one or more pollutants do not meet water quality standards, and it quotes regulations as to the definition of “pollutant”. Clearly the definition of “pollutant” does not include measures such as toxicity tests and biological assessments. The Report acknowledges this, for example in its definition of the “Regional Biological” monitoring program as “a tool to detect water quality conditions.” Report 2.1-3. Yet the Department has continued to use such measures to list waters as impaired. These tests and assessments measure pollution rather than pollutants. Further, wasteloads for such measures cannot be quantified and a proper TMDL calculation is not possible. This problem has become more apparent since the Department began to attempt TMDLs for some streams listed for benthic impairment.

VAMWA agrees that toxicity tests and biological assessments provide useful data. However, such data should be used to trigger research to identify specific stressors and in a proper weight-of-evidence approach. Toxicity tests and biological assessments cannot correctly be used to list waters as impaired because they do not identify pollutants, as defined in regulation, causing impairment. Stressors other than pollutants (habitat modification, for example) are often

responsible for the measures observed. We believe this error and the problems it causes will become increasingly apparent as the TMDL program begins to tackle many of the more difficult listings involving toxicity tests and biological impairments.

Response

EPA requires that states use their biological monitoring data in assessments. In Virginia, waters defined as impaired based on biological assessments are in violation of the narrative water quality general criteria (9VAC 25-260-20). As such, waters may violate narrative standards such as “All state waters shall be maintained at such quality as will permit all reasonable, beneficial uses and will support the propagation and growth of all aquatic life, including game fish, which might be reasonably expected to inhabit them”. Waters may also violate narrative standards associated with designated uses of waters (9VAC 25-260-10); “Aquatic Life Use: Includes the propagation, growth, and protection of a balanced indigenous population of aquatic life (including game and marketable fish) which may be expected to inhabit the waters.”

The benthic macroinvertebrate multi-metric indices that VADEQ uses to determine if aquatic life uses are being met were developed to detect degradation to the benthic community from various stressors including pollutants. Bioassessment scores that determine 303(d) impairment trigger the TMDL process. The stressors or pollutants causing the biological degradation are identified in the TMDL process.

13. “Volunteer” Monitoring Data

We recognize the substantial positive role played by instream water quality data generated by the public. While we know that laboratory qualifications and quality assurance programs are monitored, we are concerned about the representativeness of the sampling that leads to such data. The Department should specifically evaluate the sampling plans associated with data generated by the public to assure that such data are developed to be truly representative of water quality conditions.

Response

DEQ has developed a rigorous QA/QC review plan for volunteer and other outside agency data review that has been implemented over the last couple of reporting periods. The purpose of this QA/QC review is to make sure data used in the assessment is representative of water quality conditions. Quality Assurance Project Plans are approved before data is accepted for assessment.

U S Forest Service

Thank you for the opportunity to review and comment on the Draft 2006 305(b)/303(d) Water Quality Assessment Integrated Report. We have the following comments on specific streams from the supplemental list of Category 5 waters as listed in Chapter 3.3b.

14. VAW-I18R_XYE01A06 Unnamed tributary XYE to James River. The source of impairment listed for this stream is unknown. The determination was based on one benthic macroinvertebrate sample taken in March of 2002 during a drought year. This small headwater stream is listed as intermittent on the topographic map, and is designated as having “insufficient flow to support a fishery” by the Virginia Department of Game and Inland Fisheries. There is an

abundance of category 5 listings with comments in the Impairment Cause reflecting the belief that extremely low flows during the drought of 1998-2002 may have been to blame. We believe that to be the case in this instance as well. We recommend Unnamed tributary XYE not be listed as impaired.

Response

DEQ has reviewed your concerns and have concluded there is not enough information to list this water as impaired. However, since we have some data, we have included the water in Category 3 as having insufficient information. We hope additional information will provide a better picture of the associated water quality relative to aquatic life use.

15. VAV-B20R_SKD03A00 Skidmore Fork. Long term monitoring shows that during normal flow years the benthic macroinvertebrate scores are good to very good. However, during droughty years, the scores were poor/fair. This is consistent with low flow characteristics of this watershed. Further, there is an abundance of category 5 listings with comments in the Impairment Cause reflecting the belief that extremely low flows during the drought of 1998-2002 may have been to blame. We believe that to be the case in this instance as well. We recommend Skidmore Fork not be listed as impaired until such time that scientific data can be obtained to support the listing.

Response

This assessment unit is considered impaired for aquatic life use based on a moderately impaired status from the benthic macroinvertebrate survey conducted by the U.S. Forest Service at this site in 2001. USFS believes this is a drought related impairment from the 1998-2002 regional drought and a natural condition. Recreational, Wildlife and Fish Consumption uses were not assessed

16. VAV-B37R_RNR01A00 Roaring Run. This assessment unit is considered impaired for aquatic life use based on a moderate impaired benthic status at U.S. Forest Service site 4048. The source is listed as unknown. Water quality at this site does not appear to be limiting. Forest Service District personnel who collect the samples note that the stream channel seems to still show impacts from the historic iron ore furnace nearby. We recommend collecting additional data to support the listing. Possibly, listing the stream as a Category 3B (Data Available But Insufficient Quantity) versus a Category 5, may be more appropriate.

Response

This assessment unit is assessed as having insufficient information for an aquatic life use assessment. One USFS benthic sample at site 4048 indicated a possible impairment, but this site may be impacted by an old iron ore furnace. Additionally, there are several concerns by USFS about the sampling location. USFS is considering follow-up sampling to better determine if impairment exists on this stream segment. Recreational, wildlife and fish consumption uses were not assessed.

The Hampton Roads Sanitation District is pleased to offer our comments on the referenced document. We highlight several of our key concerns in this letter and provide more detailed comments in the pages following.

17. Aquatic Vegetation Impairments: Impairments for SAV acreage should not be assessed without the concurrent water clarity measurements (as measured by percent-light-through-water). The water clarity criterion requires assessment of both SAV acreage and water clarity acreage. If the water clarity acreage component of the criterion is met, then the segment in question is not considered impaired, regardless of SAV acreage. Without measuring this second component of water clarity, it is premature to categorize these waters as impaired. HRSD recommends that these listing decisions be changed to “insufficient data” until water clarity acreage can be assessed. This is consistent with methods being employed in Maryland for this same criterion.

Response

There are two assessment criteria for the Shallow Water SAV designated use: 1) “SAV Acres” and 2) “Water Clarity Acres”. Under DEQ’s independent assessment protocols and past practice, each of these criterion may be applied independently and use attainment may be determined from either one independent of data availability for the other. The only deviance from this practice specific to these criteria as stated in the regulations is that water clarity acres applies only when SAV acres are not met. This is because SAV acres is the direct measure of the biological community and indisputable evidence that the designated use is met regardless of the conditions of water clarity.

HRSD disagrees with the assignment of Municipal Point Sources, SSOs and CSOs as sources of impairment for aquatic plants in the lower Virginia tributaries. The best available information indicates that these impairments are attributable to excessive inorganic suspended sediments from non-point sources and/or localized re-suspension of suspended sediments.

Response

Much research has shown that nutrients impair SAV growth and survival in Chesapeake Bay and tributaries through stimulation of epiphytic growth on leaf surfaces. Much monitoring and modeling has also shown that Municipal Point Sources, SSO’s and CSOs are sources of nutrients throughout the Chesapeake Bay and tidal waters (as are other sources). Though a detailed relative quantification of the impairing cause (i.e. epiphytic growth vs. water column turbidity) and sources (i.e. point sources vs. non-point sources etc.) has not been performed for each separate segment during this assessment period, DEQ feels that this cause and the sources are present to some degree throughout every aquatic vegetation impaired tidal segment and has put these causes/sources for all. We acknowledge that some available information (i.e. the “Gallegos model”) suggests that water column turbidity due to suspended sediments is the largest cause of aquatic vegetation impairments in the James segments, however it does not categorically exclude any effects of nutrients. This cause (suspended sediment re-suspension) and appropriate sources (non-point and internal recycling) were also identified in the draft report for every aquatic vegetation impaired segment.

18. TBT impairments: Chapter 6.9 of the report indicated that the impairments for TBT are based upon the chronic WQS criterion as opposed to the acute criterion. This is in opposition to

VDEQ 303(d) listing guidance. Also, the report fact sheets indicate that the segments in question failed to meet DEQ's acute TBT criterion. This statement is not supported by the data which indicate that exceedances occur only for the chronic criterion of 1 ng/L. Further, EPA updated this criterion in 2004 to 7.4 ng/L. As such, DEQ must recognize that TBT concentrations below 7.4 ng/L do not impact aquatic life according to EPA. DEQ is urged to begin the process of revising the TBT WQS prior to TMDL development.

Response

Chapter 6.9 of the report discusses regional water quality initiatives and tributyltin is only specifically discussed in this chapter for the tidal fresh James River between Richmond and Hopewell with regard to sediment sampling. The tidal fresh James River was not listed as impaired for tributyltin. The report fact sheet did incorrectly indicate that the segments in question failed to meet DEQ's acute TBT criterion. The Integrated Report FINAL document has corrected typographical errors resulting in inconsistency in the fact sheets for the Elizabeth River and Lafayette River TBT impairments to indicate that the segments failed to meet DEQ's saltwater chronic criterion.

True, the use of the chronic criterion in assessment does not specifically follow the VADEQ 303(d) listing guidance, but it is not in opposition to the guidance either. The guidance is derived to cover most situations under normal monitoring circumstances; hence the usual assessment practice of comparing 'grab' sample data to the acute criterion. This does not mean that DEQ should ignore situations where clearly there is an excursion of a criterion at lower levels, consistently over time. For example, in the Elizabeth River, there are sufficient excursions above Virginia's chronic water quality standard for tributyltin to make this determination. There is a high frequency of excursions (90-100% of the time) for every sampling station (30 events at each station) above the chronic criterion of .001 ppb taken over the five year period at DEQ's monitoring stations on the Main, Southern and Eastern Branch Elizabeth River. That number of excursions indicates a long term (chronic) impact under the Clean Water Act regardless of what the VADEQ 303(d) listing guidance says about assessing against the acute criteria. DEQ intends to consider the new EPA criterion during the upcoming triennial review (follow this rulemaking on <http://www.deq.virginia.gov/wqs/rule.html>) which will be published first as a Notice of Intended Regulatory Action on September 18, 2006.

19. PCB and Mercury fish tissue impairments: The public did not have the opportunity to comment on either the PCB or mercury fish tissue screening values. Additionally, the methods used to quantify contaminant levels in fish tissue have not been promulgated. Data has questionable validity when it is produced without the benefit of EPA documented intra- and inter-lab studies that demonstrate a test method's reliability as well as public review and comment.

Response

The Code of Virginia § 62.1-44.19:5.C.1 requires DEQ to list as impaired all waterbodies subject to fish consumption advisories which are issued by the Virginia Department of Health when fish contamination exceeds their level of concern. The fish tissue value used by DEQ of 54 parts per billion is the basis for the "human health" water quality criterion for total PCBs adopted in 2002 and this criterion was subject to public review and comment during the Administrative Process Act associated with the adoption of this criterion. Please also see response to comment # 25

below for additional information on this. The public also had numerous opportunities to comment on the use of this PCB value for 305(b) assessments during the 2002, 2004 and 2006 305(b) assessments. The Virginia Department of Health fish tissue value for mercury was also subject to public comments during the 2002, 2004 and 2006 305(b) assessments.

DEQ considers the analytical methods used to quantify contaminant levels in fish in Virginia as being reliable and using the best science available. The methods used by the analytical lab follow methods recognized and recommended by EPA for the analysis of fish tissue and work by this analytical lab has been published in respected peer reviewed scientific journals. A discussion of acceptable fish tissue contaminant analysis methods can be found on EPA's website www.epa.gov/waterscience/fishstudy/tissue.htm and in chapter 10 of EPA's publication Quality Assurance Project Plan for Analytical Control and Assessment Activities in the National Study of Chemical Residues in Lake Fish Tissue (EPA 823-R-02-006). Please also see response to comment # 26 for a more specific response regarding the analytical methods used by our lab at William and Mary for analysis of mercury in fish tissue.

20. Estuarine Bioassessment impairments: The public did not have the opportunity to comment on the "Degraded Area" method of calculating B-IBI. The use of the discriminant analysis tool to assign sources of impairment is intended only as a "general guide" for identifying an impairment source. Additionally, the discriminant analysis tool was not validated with independent data. As such, it is indefensible to list a definitive source for impairment in the 303(d) list. A separate comment as to the suspected cause for impairment would be more appropriate.

Response

A workgroup composed of staff from EPA, DEQ, Maryland Department of the Environment and benthic scientific experts feels that there is sufficient validity to the discriminant analysis tool to identify impairment sources for the draft report. More in-depth study will be conducted when a TMDL is developed that will either confirm suspected sources or identify alternative ones.

21. Dissolved Oxygen impairments: Previous monitoring reports have not indicated dissolved oxygen (DO) problems in the lower James River. Given these past results we question the new impairment listings of DO in the oligohaline and mesohaline segments. These new listings are believed to be due to changes in assessment methodology and data sources rather than degrading conditions. A lack of specific guidance and software tools prevented HRSD from performing a thorough assessment of the issues. However, a summary analysis of the raw data suggests that the amount of data available for analysis was not sufficient to arrive at defensible conclusions using the new methods. HRSD recommends that 30-day DO listing decisions be changed to "Insufficient data" and that DEQ consider significantly expanding the DO monitoring program in the near future.

Response

See comment #29

22. General Comments: It is our understanding that the shellfishing use in waters that have been condemned by VDH-DSS has been removed. Therefore, these waters are not being listed as impaired and will not require a TMDL. If this is incorrect, please let us know.

Response

DEQ considers the shellfish use not applicable in areas that have administrative condemnations strictly due to the presence of a permitted discharge. Any areas that have adverse bacteria data that results in a shellfish condemnation will need to go through the TMDL process.

HRSD Comments on 2006 Virginia 303(d)/305(b) Integrated Report - DRAFT

23. James River Basin: VAT-G11E, VAT-G10E; York River Basin: VAP-E25E; VAP-F25E; VAT-F27E; Chesapeake Bay/Small Coastal Basins: VAT-C08E; VAP-C04E; Listed for aquatic plant impairments

A WQS for water clarity exists to protect and restore submerged aquatic vegetation. There are two components to this criterion, SAV acreage and water clarity acreage as measured by percent-light-through-water. Water clarity acreage was not measured in these segments; the waters were listed as impaired due to a failure to meet CBP SAV acreage goals. As stated in the DEQ's current 303(d) listing guidance, the absence of SAV alone does not indicate water clarity impairment. If the water clarity acreage component of the criterion is met in the segments in question, "then the shallow-water submerged aquatic vegetation use is met" (and, consequently, the aquatic life use is also met). HRSD supports the finding that the CBP acreage goals have not been met, however, without water clarity measurements that would indicate whether a water body was truly impaired, the listings are premature and potentially inaccurate.

The causes for non-attainment of SAV goals for all areas are listed as "Agriculture, Atmospheric Deposition, Nitrogen, clean sediments, Industrial point sources, Internal nutrient cycling, loss of riparian habitat, municipal point sources, sediment re-suspension, sources outside State boundaries, wet weather discharges (point source), wet weather discharges (point source and combination of stormwater, SSO, or CSO)." HRSD disagrees that municipal point sources, SSOs, and CSOs are a cause of SAV losses in the lower Virginia tributaries. There are technical tools available which can assign the relative causes of poor water clarity between background color, suspended solids, and chlorophyll (Gallegos, 2001). Based upon these principles modeling has shown that inorganic suspended sediment is a major source of turbidity throughout much of the Bay and tidal tributaries, and that restoration of SAV has been shown to be impossible without solids controls (Cercio and Moore, 2001). In addition, the recent James River alternatives analysis conducted to establish chlorophyll standards (DEQ, 2005) indicated no discernable difference between SAV acreage due to substantial nutrient reduction scenarios. The best available information, therefore, indicates that the causes for SAV impairments in the lower Virginia tributaries should be revised as "Excessive inorganic suspended sediments from non-point sources and/or localized re-suspension of suspended sediments".

While HRSD agrees that the use of the Chesapeake Bay Program segments provides comparability with the Chesapeake Bay Program data and goals, the use of these larger segments, particularly when assessing SAV acreage, obscures the actual areas of non-attainment. Many of the individual segments listed in the report for impairment could be in attainment, but this information is lost when these segments are included in a much larger Bay Program segment. Not only does this artificially inflate the number of segments listed as impaired, but this could also result in inappropriate resource allocation during TMDL implementation. Much

time and effort can be spent identifying specific sources of impairment in waters that are not truly impaired.

Although listing potential sources for impairment has questionable value when the true impairment status of the water is unknown, HRSD does agree that non-point source run-off from wet weather events could cause water clarity impairments, resulting in failure to meet CBP SAV acreage goals. The report lists non-point source run-off as a potential source for impaired waters in the Tidewater region. However, non-point source wet weather events are specifically NOT listed for the York River and Middle Peninsula impairments. HRSD believes this to be an oversight.

Recommendations

In order to address our concerns regarding the aquatic plant listings, HRSD recommends the following to the DEQ:

Consistent with the methods used by Maryland, the impairment listings for the aquatic plants must be replaced with an “Insufficient Data to Assess Criteria” designation for all Chesapeake Bay waters. Such a classification is the defensible approach until water clarity acreage can be assessed.

Should DEQ move forward with the listing for impairment, municipal point sources, SSOs, and CSOs must be removed as causes for SAV impairments in the lower tributaries. The sources should be attributed to “Excessive inorganic suspended sediments from non-point sources and/or localized re-suspension of suspended sediments”.

In order to identify smaller and more meaningful stream impairments, consideration should be given to assessing the tidal creeks and sub-estuaries as separate segments. Consistent with previous methods, statistical analysis should be performed to determine which monitoring stations yield comparable results and can be grouped together for monitoring and assessment purposes.

Response

There are two assessment criteria for the Shallow Water SAV designated use: “SAV Acres” and “Water Clarity Acres”. Under DEQ’s independent applicability practice, each of these criterion may be applied independently and use attainment may be determined from either one independent of data availability for the other. As stated in the DEQ assessment guidance (pg 33) specific to SWSAV criteria: “If sufficient data are not available to assess “water clarity acres”, and the SAV criteria acres is not met, then the water shall be considered impaired for this designated use”. The only deviance from “independent applicability” specific to these criteria as stated in the regulations is that water clarity acres apply only when SAV acres are not attained. This is because SAV acres is the direct measure of the biological community and indisputable evidence that the designated use is met regardless of the conditions of water clarity. DEQ recognizes that Maryland does not follow this listing protocol and is therefore not as protective of the designated use as Virginia.

In regard to the sources of aquatic vegetation impairment, much research has shown that nutrients impair SAV growth and survival in Chesapeake Bay and tributaries through stimulation

of epiphytic growth on leaf surfaces. Also, much monitoring and modeling has also shown that Municipal Point Sources, SSOs and CSOs are sources of nutrients to some extent throughout the Chesapeake Bay and tidal waters. Though a detailed relative quantification of the impairing sources (e.g. epiphytic growth vs. water column turbidity, point sources vs. non-point sources) has not been performed for each separate segment during this assessment period, these sources are present to some degree throughout every aquatic vegetation impaired tidal segment. We acknowledge that some available information (i.e. the “Gallegos model”) suggests that water column turbidity due to suspended sediments is the largest cause of aquatic vegetation impairments in the James and elsewhere, however it does not categorically exclude effects of nutrients. The suspended sediment related sources (e.g. agriculture, loss of riparian habitat, sediment re-suspension, wet weather discharges (point source and combination of stormwater, SSO, or CSO) were also identified in the draft report for every aquatic vegetation impaired segment. The only apparent exception was the York River and Middle Peninsula impairments which was be indeed an oversight and will be corrected.

Assessment of impairments on the spatial scale of large segments was an integral concept during the development of the Bay specific criteria and defined as the method of assessment (EPA 903-R-03-002 “Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries” and the 2004 Addendum). There is some flexibility for smaller size waterbody assessment if sufficient number of stations or data is available for assessment at this scale and this will be used if available. The “grouping” of different station data for assessment is essentially achieved through the spatial interpolation of data which gives a more accurate representation of conditions throughout the spatial area of assessment than grouping or using only raw data from several select individual stations.

24. James River basin; Southern Branch, Eastern Branch and Mainstem of Elizabeth River; Lower Lafayette River; VAT-G15E; Listed for TBT

Chapter 6.9, page 13 of the report, indicates that the chronic standard of 1.0 ng/L is “regularly exceeded” in the Elizabeth River and that there has been no observed exceedance of the acute standard “(360 pptr)”. Review of the monitoring results supports this statement. However, the fact sheets for the Elizabeth River and Lafayette River TBT impairments states that the segments failed to meet DEQ’s saltwater ACUTE criterion. Clearly, this statement is not supported by the data. In addition, HRSD believes the statement that the acute standard is 360 pptr to be in error. The saltwater acute criterion as listed in the 2006 Virginia Water Quality Standards is 380 pptr.

Although all TBT measurements made in these water segments exceed the chronic water quality criterion of 1.0 ng/L, these listings contradict DEQ’s current 303(d) listing guidance which does not list any water segment based on exceedances of chronic water quality criteria. The chronic averaging period is 4 days; the acute criterion averaging period is one hour. Grab samples, which are used to generate the TBT data for these water segments, can only represent periods of time on the scale of acute criteria (minutes up to an hour). Therefore, grab sample data translates well when compared to acute criteria but not so for chronic criteria. DEQ acknowledges that a grab sample is not comparable to a four-day average (letter from A.E. Pollock, DEQ, May 3, 2001), and states that this is why DEQ is not using chronic criteria for water segment assessments. Since the acute criteria have not been exceeded for these water segments, they must not be listed for TBT.

DEQ must recognize that in January 2004, EPA updated the national chronic criterion for TBT from 1 ng/L to 7.4 ng/L. Therefore, if DEQ uses the chronic water quality standard to list waters (even though this does not follow DEQ's own guidance), it must realize that TBT concentrations below 7.4 ng/L do not impact aquatic life according to EPA. DEQ is urged to begin the process of revising the TBT water quality standards prior to TMDL development.

The listings state that the sources of impairment are "other shipping releases (wastes and detritus), shipbuilding, repairs, drydocking". Although HRSD questions the use of chronic standards to list the water as impaired, HRSD agrees with this statement and supports DEQ's conclusion that other sources are not responsible for perceived exceedances of this standard.

Recommendations

In order to address our concerns regarding the TBT listings, HRSD recommends the following courses of action to the DEQ:

DEQ must follow its own guidance and list only those waters that have exceedances of acute WQS.

Given that EPA revised the national WQS for TBT in January of 2004 (increasing the chronic criterion to 7.4 ng/L and the acute criterion to 420 ng/L), DEQ is urged to begin the process of revising the TBT WQS prior to TMDL development.

Response

[The Integrated Report FINAL document has corrected typographical errors resulting in inconsistency in the fact sheets for the Elizabeth River and Lafayette River TBT impairments to indicate that the segments failed to meet DEQ's saltwater chronic criterion. \(see comment # 18 for additional information\)](#)

25. James River Basin: VAT-G11E, VAT-G10E, VAT-G15E; York River Basin: VAT-F26E, VAT-F27E; Chesapeake Bay/Small Coastal Basins: VAT-C08E, VAP-C04E, VACB-R01E; Listed for PCB in fish tissue

The public was not involved in developing either the DEQ screening value of 54 ppb or the VDH screening value of 50 ppb, in contrast to the public process that is available when DEQ takes action impacting the public (water quality standard review, for example). Numerous assumptions are employed in the development of fish tissue screening values and the public should have the opportunity to comment on these before they are used to make regulatory decisions. The use of numerous assumptions, each with their associated level of uncertainty, can produce unacceptably inaccurate results. With subsequent TMDL development, this can result in unnecessary and fruitless regulatory action. For this reason, the public must be allowed to participate in decisions so that consensus can be reached on the appropriate level of caution to employ in the assumption-making process. The measures used to establish fish tissue impairment for PCB's have not met any APA requirements and must not be used to list waters for impairment.

Additionally, there are no promulgated methods in 40 CFR for PCB analysis in fish tissue. Currently, the only 40 CFR promulgated method for measuring fish tissue concentrations is for

the analysis of tetra- through octa-chlorinated dioxins and furans. The integrity of the criteria development process is dependent on the reliability of analytical methods to characterize environmental exposure and, hence, risk. The public can only be assured that the proposed criteria are reliable if the analytical methods used to measure contaminants are reliable. Further, compliance with environmental benchmarks cannot be reliably determined without reliable analytical methods; method reliability is documented through promulgation. The reliability of analytical methods is routinely demonstrated and documented by EPA through intra- and inter-lab studies. These studies provide the foundation upon which analytical methods are promulgated in 40 CFR Part 136. While these listings do not impose VPDES regulatory actions by themselves, resulting TMDL implementation plans may take on regulatory significance. In this context, HRSD firmly believes that all criteria or other benchmarks used to make regulatory decisions must remain in draft form until promulgated analytical methods are in place to reliably determine if those criteria or benchmarks are technically and scientifically sound.

Recommendations

In order to address our concerns regarding the PCB listings, HRSD recommends the following courses of action to the DEQ:

Data used to assess impairment is brought into question when screening values are developed without benefit of public comment and when analytical methods that do not have demonstrated reliability are used. DEQ must, at a minimum, follow appropriate APA protocol prior to listing waters for fish tissue impairments.

Response

Overriding this matter is the fact that the Code of Virginia § 62.1-44.19:5.C.1 requires DEQ to list as impaired all waterbodies subject to fish consumption advisories which are issued by the Virginia Department of Health.

In addition, the public has been involved in the development of the water quality criteria, certain of which are designated to protect the production of edible fish and shellfish in state waters. In order to protect this designated use, Virginia has established water quality standards and specific criteria designed to prevent fish from becoming contaminated beyond a certain, acceptable level with a variety of toxic pollutants, including PCBs. These water quality criteria are calculated based on first establishing an acceptable concentration of the contaminant in fish tissue, then converting this into a water column concentration that should prevent the contamination of the fish beyond the acceptable concentration. Thus, the water quality criterion effectively establishes an acceptable fish tissue contamination concentration. The calculations involve several variable factors, what the comment refers to as assumptions. These include average body weight of the consumer, average fish consumption rate, an acceptable extra cancer risk level (for carcinogens like PCBs), and a toxicological value specific to the toxic contaminant; a reference dose for non carcinogens and an oral slope factor for carcinogens. In order to convert this acceptable fish tissue concentration into a water column concentration, a bio-concentration factor is used. The only difference between the water criterion and the fish tissue value is the bio-concentration factor which is used to translate the acceptable fish tissue value into a water column concentration. During the adoption of the water quality criteria, the calculation methods and these variables were reviewed and commented on by the public following Administrative Process Act (APA) procedures.

The Virginia water quality standards criterion based fish tissue value and water quality criterion for total PCBs are both based on the exact same variables, the only difference is a bio-concentration factor needed for conversion to a water concentration. This was explained in the 305(b) guidance manual in 2002, 2004 and again in 2006 in section 6.5.2 and all of this was subject to public review and comment during each 305(b) assessment. All of the variables involved in the calculation of the water quality criterion have been subjected to public review and comment during the adoption of these criteria in 1992 and during every triennial review since then. Each time the full Administrative Process Act protocols were followed, giving the public numerous opportunities to participate in this process as well as during each 305(b) assessment in 2002, 2004 and 2006.

The fish tissue value of 54 ppb total PCBs used by DEQ to assess fish tissue is the water quality standards criterion based tissue value and is based on the Virginia water quality criterion for total PCBs of 0.0017 ppb in water which is designed to protect human health from toxic effects through fish consumption. This water criterion is designed to prevent fish from becoming contaminated to concentrations above 54 ppb, which is the PCB-fish contamination level established as acceptable by the water quality criterion for PCBs. The difference between DEQ's value of 54 ppb and the Virginia Department of Health's value of 50 ppb is due to the Department of Health rounding their value to one significant digit. This small variation is highly unlikely to make much difference in actual assessment results.

Regarding the analysis of PCBs; although there are no 40 CFR promulgated methods for measuring PCBs in fish tissue, there are certainly published and accepted EPA methods for such needs. As the comment correctly notes, the assessment of fish tissue is not a regulatory matter for which 40 CFR methods are appropriate. The 305(b) assessment is an effort to use the best science available and to provide the most accurate assessment of the water resources of Virginia. An important concern associated with fish contamination assessment is public health and safety. What is most important for assessment is the use of the best science available, and DEQ considers the analytical methods used to quantify contaminant levels in fish in Virginia as being very reliable. The PCB analyses were conducted using techniques currently employed by EPA and other regulatory and scientific agencies (PSE and gas chromatography (GC) using capillary columns and mass spectrometry (MS). Pressurized fluid extraction (PSE) has been found to be as, or more efficient than soxhlet or sonication. It is faster and consumes less solvent and hence, is preferable. PSE is accepted by EPA for analytes such as PCBs in solid matrices such as fish (see EPA Method 3545A). VIMS is now also using GC/MS to determine individual congeners present. Multiple level calibration is used. This technique is prescribed in EPA Method 8270 for the determination of semi-volatile compounds such as PCBs from solids. MS, in the selective ion mode, is used to provide greater selectivity and sensitivity. EPA has shifted to performance-based criteria for analytical methods as techniques improve at a faster rate than EPA can formally promulgate methods. Accuracy of the VIMS method has been verified by the analysis of Standard Reference Materials obtained from NIST. In addition, surrogate standards are added to each sample to determine recoveries and laboratory blanks are run coincident with each set of samples.

26. Chowan River Basin, Blackwater River, VAT-K36R_BLW02; York River Basin, Pamunkey River, VAP-F13E: Listed for Mercury in fish tissue

DEQ recognizes that natural conditions can increase the potential for mercury bioaccumulation in fish. HRSD encourages DEQ to consider attainability for waters listed for mercury in fish tissue where natural conditions are associated with an increased potential for bioaccumulation.

The public was not involved in developing the VDH screening value of 0.5 ppm, in contrast to the public process that is available when DEQ takes action impacting the public (water quality standard review, for example). As mentioned previously, numerous assumptions are employed in the development of fish tissue screening values and the public should have the opportunity to comment on these before they are used to make regulatory decisions. The use of numerous assumptions, each with their associated level of uncertainty, can produce unacceptably inaccurate results. With subsequent TMDL development, this can result in unnecessary and fruitless regulatory action. For this reason, the public must be allowed to participate in decisions so that consensus can be reached on the appropriate level of caution to employ in the assumption-making process. The measures used to establish fish tissue impairment for mercury have not met any APA requirements and must not be used to list waters for impairment.

There are no 40 CFR promulgated methods for measuring mercury in fish tissue. As mentioned previously, the integrity of the criteria development process is dependent on the reliability of analytical methods to characterize environmental exposure and, hence, risk. The public can only be assured that the proposed criteria are reliable if the analytical methods used to measure contaminants are reliable. Further, compliance with environmental benchmarks cannot be reliably determined without reliable analytical methods; method reliability is documented through promulgation. The reliability of analytical methods is routinely demonstrated and documented by EPA through intra- and inter-lab studies. These studies provide the foundation upon which analytical methods are promulgated in 40 CFR Part 136; the methods used to show compliance with NPDES permits. While these listings do not impose VPDES regulatory actions by themselves, resulting TMDL implementation plans may take on regulatory significance. In this context, HRSD firmly believes that all criteria or other benchmarks used to make regulatory decisions must remain in draft form until promulgated analytical methods are in place to reliably determine if those criteria or benchmarks are technically and scientifically sound.

Recommendations

In order to address our concerns regarding the mercury listings, HRSD recommends the following courses of action to the DEQ:

Data used to assess impairment is brought into question when screening values are developed without benefit of public comment and when analytical methods that do not have demonstrated reliability are used. DEQ must, at a minimum, follow appropriate APA protocol prior to listing waters for fish tissue impairments.

Response

DEQ is aware that some natural conditions can increase the potential for mercury bioaccumulation in fish in certain waterbodies. DEQ will consider this issue when such waterbodies are subject to a TMDL. However, this does not mean that the public should expect Virginia to automatically use a lower level of protection of human health in the 305(b) assessment of these waters.

The public has had the opportunity to review and comment on the use of the Virginia Department of Health's fish tissue value of 0.5 ppm mercury during the 2002, 2004 and 2006 305(b) assessments. Also, as stated previously, the Code of Virginia § 62.1-44.19:5.C.1 requires DEQ to list as impaired all waterbodies subject to fish-consumption advisories which are issued by the Virginia Department of Health. Thus the General Assembly effectively requires DEQ to use the Virginia Department of Health's fish consumption advisories and public health concerns when making a final determination on this issue.

For the comment regarding the analytical methods used in determining fish tissue contamination concentrations, please see the response to comment # 25 above.

Specifically regarding the analysis of mercury; although there are no 40 CFR promulgated methods for measuring mercury in fish tissue, there are certainly published and accepted EPA methods for such needs. The lab currently uses Method 3052, "Microwave Assisted Acid Digestion of Siliceous and Organically Based Matrices", for fish tissue digestions and Method 1631, Revision E, "Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry", the latter of which is applicable to all forms of total mercury analysis in digested or aqueous solutions. These are the most up to date methods provided by the EPA. The microwave is annually calibrated and has digestion methods specifically designed for these EPA methods. The fluorescence system and procedures are exactly the same as those discussed in the EPA 1631 procedures. QA/QC includes routine analysis of methods blanks (one per every microwave batch digestion), weekly preparation of new calibration standards as well as routine checks of calibration variations every 15-20 sample runs, matrix spikes of random samples to ensure proper analyte recovery, and duplicate analyses of every fifth sample. These performance standards are typical of any private laboratory that must be able to provide "valid" data. At least 3-6 certified SRM oyster tissue samples from NIST are carried through the identical procedures every year and are consistently within +/- 2-10 % of the certified value for any given analysis. One could certainly argue the fact that the NIST SRMs go through rigorous inter-laboratory testing, typically using a variety of methodologies, thus the lab's ability to reproduce the certified values on a routine basis should represent a reliable method of analysis.

27. James River Basin: VAT-G11E, VAT-G10E, VAT-G15E; York River Basin: VAT-F26E, VAT-F27E, VAP-F25E; Chesapeake Bay/Small Coastal Basins: VAP-F14E, VACB-R01E; Listed for Estuarine Bioassessments

The public did not have the opportunity to comment on the "Degraded Area" method of calculating B-IBI. This is another example where an impairment that could have subsequent regulatory action is based upon a benchmark that has not been made available for public scrutiny and comment.

The assignment of sources for benthic impairment in segments VAP-F14E_PMK07A04, VAP-F14E_PMK06B06, VAP-F14E_PMK06A00, and F14E_PMK05B00 is inconsistent with the assignment of sources for all other York River and Hampton Roads area benthic impairments. The source for impairment in above-referenced segments was listed as either "contaminated sediments" or "Agriculture, Atmospheric Deposition - Nitrogen, Industrial Point Source Discharge, Internal Nutrient Cycling, Loss of Riparian Habitat, Municipal Point Source Discharges, Sources Outside State Jurisdiction or Borders, Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO)". Review of the data in the referenced Versar report(Llaso et al., 2005), indicates that similar discriminant analysis results in the York

and Hampton Roads area river basins resulted in impairment source “unknown”. Additionally, the discriminant analysis tool was not validated with independent data. Further, the report indicates that this tool should only be used as a “general guide for identifying potential causes of degradation”. Therefore, it is indefensible to list a definitive source for impairment in the 303(d) list. A separate comment as to the suspected cause for impairment would be more appropriate.

Recommendations

In order to address our concerns regarding the estuarine bioassessment listings, HRSD recommends the following courses of action to the DEQ:

Waters should not be listed as impaired based on the “Degraded Area” method of calculating B-IBI until the DEQ has complied with APA protocol.

Identifying a definitive source of impairment is problematic as the discriminant analysis tool has neither been validated with independent data nor is it intended for use other than as a general guide. A note in the “comments” section of the fact sheet as to the suspected source of impairment would be more appropriate.

Response

While as with any analysis method, there are technical improvements possible, a workgroup composed of staff from EPA, DEQ, Maryland Department of the Environment and benthic scientific experts feels that there is sufficient validity to the discriminant analysis tool to identify impairments and sources.

The assignment of sources for benthic impairments was based upon the results of diagnostic analyses ([2006 303\(D\) Assessment Methods For Chesapeake Bay Benthos, Final Report Submitted to Virginia Department of Environmental Quality, Roberto J. Llansó, Jon H. Vølstad, Versar Inc., Daniel M. Dauer, Michael F. Lane, Old Dominion University, September 2005](#)) and are shown in a map on page 6.7-26. Upon review of this comment we have found there was an error in the sources of benthic impairment for VAP-F14E_PMK07A04. It should be “unknown” and this has been corrected.

28. York River Basin; Moncuin Creek: VAP-F13R_MNQ01A98; Listed for E. coli

The TMDL was recently completed by DEQ and submitted to the EPA for approval May 2006. Updated information that indicates that a TMDL study has been initiated would be helpful to include in the “comments” section of the fact sheet.

Recommendations

In order to address our concerns regarding the E. coli listing for Moncuin Creek, HRSD recommends the following courses of action to the DEQ:

Please indicate that the TMDL has been initiated in the “comments” section of the fact sheet.

Response

Although the data window for this assessment closed on 12/31/2004, the wording about the 2006 TMDL for Moncuin Creek has been added to the final report, as requested.

Chesapeake Bay – Chapter 6.7

29. DISSOLVED OXYGEN

The most recent assessment of water quality conditions in the James River (Dauer et al., 2003) indicated that dissolved oxygen was good and improving in many segments. This finding was also referenced in the most recent James River tributary strategy (Commonwealth of Virginia, 2005) which indicates that “The James does not typically experience depressed dissolved oxygen conditions due to its closeness to the ocean and good mixing through the water column”. Given these previous findings we were surprised to find DO impairment listings for the JMSMH and JMSOH segments. This change in status, at a minimum, represents a reason to further evaluate the methodology and question the result.

Concerns with “black box” Bay Program analysis

The Water Quality Assessment Guidance Manual for Y2006 (DEQ, 2005) provides a general description of the DO assessment methodology. The manual also provides reference to the EPA criteria document which describes the cumulative frequency distribution protocol (CFD). However, these general descriptions do not provide a sufficient level of detail or software support in order to perform independent analysis or to duplicate the results. To further complicate the picture the Bay Program plans to change the methodology and request comments on the procedure this summer or fall. Because of this situation the DEQ had to rely on the Chesapeake Bay Program Office to perform the Bay criteria assessments. This type of arrangement consists of a “black box” where data goes in, and results come out – but little understanding is possible of the underlying causes. Something as important as the 303(d) listings of impairment must be repeatable and verifiable by stakeholders. If stakeholders cannot verify the data behind the listings, then their ability to provide in-depth technical comment is limited.

The DO impairment listings for JMSOH and JMSMH listings are questionable

As indicated in the previous section HRSD was unable to duplicate the results from the Bay Program assessment of DO for the JMSOH and JMSMH segments because the assessment procedures were not available to the public. However, to improve our understanding of the new DO listings we requested and received from the DEQ the raw data used in the assessment of these segments. A cursory analysis of these data was conducted. Our analysis methods consisted of calculating average DO concentrations for each CBP segment, station, and sampling date combination. With this approach the data in each vertical profile was averaged, which is appropriate since the open water DO designated use extends from the surface to the bottom. Separate analyses were conducted for all stations and those for DEQ CBP Tributary monitoring sites only. The results are summarized in Tables 1-4 (attached). Our conclusions of possible implications from that analysis are as follows:

The frequency of vertical profiles with average DO results less than 5.0 mg/l were substantially less for DEQ CBP monitoring sites (i.e. RET 5.1, RET5.2, LE5.1, LE5.2, and LE5.3) than the myriad of other station data contained in the data set. Possible implication: The non-DEQ CBP sites appear to be a “driver” of the DO listings of impairment. If the DO assessments were done

including only the DEQ CBP stations the results would most likely have found DO in attainment. Traditionally monitored DEQ deep water stations located in the main stem James River exhibited DO profiles with concentrations less than 5.0 mg/l consistently less than 10% of the time.

A review of the non-DEQ CBP sites indicated that many were geographically located in sub-tributaries such as Jones Creek, Warwick River, Pagan River, Nansemond River, Deep Creek, etc. Lower DO levels in these areas are typical of poorly flushed embayments. They should not be viewed as representative of the larger segments. Possible implication: We believe that inclusion of these embayment data served to bias the interpolation step of the CFD involving the segments as a whole. Consider the following hypothetical example: If DO inside the Pagan River is assessed at 4 mg/l, and the nearest deep water station (LE5.2, miles away) is 5 mg/l, the volume of water between these stations would be interpolated as 4.5 mg/l (a volume in violation). However, in reality, the low DO water of the Pagan would most likely not extend past its mouth. Although this is a gross over-simplification, the example illustrates the possible horizontal bias in the volumetric interpolation (i.e smearing) that could occur when too few monitored data (i.e. stations) exist between the sub-estuaries and mid-channel main-stem.

Many other non-CBP DEQ sites with low DO were encountered at random ODU benthic monitoring sites. A further review of the ODU data indicates that DO data collection occurred only at the bottom (because only one result was reported per date and station). Benthic only DO measurements are instructive of benthic conditions as they are intended. However, these data do not serve to measure the entire water column profile as is necessary to assess the open water designated use for the James River (which is classified as surface to bottom). Possible implication: Because the ODU benthic monitoring assessed only bottom conditions, the data could bias the assessment. Similar to the above example involving tidal creeks, the inclusion of low DO results for the bottom waters only (lacking results to the surface) would serve to bias the volume low in a vertical dimension, thus artificially increasing the volume of low DO water assumed to exist in the segments.

The monitoring was not conducted frequently enough to determine compliance with standards expressed as 30-day means. The frequency of monitoring of stations in the data base was generally once per month for most data sources. Possible implication: When data collected at this frequency is assessed relative to a 30-day expression (i.e. 5.0 mg/l), the data is subjected (in practice) to the rigors of an instantaneous standard. A monthly monitoring frequency does not provide enough data to accurately assess compliance with a 30-day averaging period.

HRSD reviewed the data for JMSOH and JMSMH segments only for these comments. However, similar issues should be evaluated for other Chesapeake Bay segments.

Response

The 2006 assessment is a transitional assessment for the new dissolved oxygen criteria. Possible refinements to protocols are described in the draft report and will be shared with stakeholders before the next assessment is completed. DEQ was also somewhat surprised that some segments (e.g. JMSOH, JMSMH) were found to be impaired but feels that the analyses performed were valid based upon the current EPA guidance ((EPA 903-R-03-002 “Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries” and the 2004 Addendum). The analyses were performed by EPA-CBPO and various software tools used were made available through the guidance published by DEQ. We

recognize that these were not very user-friendly and expect to have easier and updated tools available for the next assessment that would allow other stakeholders to reproduce the analyses. The results analyses of raw data as in the comment can not be compared to the complex protocols of interpolation and CFD generation. The inclusion of non-CBP DEQ data did not bias results because the analyses was run both with and without this data and it was found that while there was very slight differences in % non-attainment, it did not change the impairment results. The EPA guidance indicates monthly data is appropriate for assessment of 30 day mean criteria (EPA 903-R-03-002 “Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries” and the 2004 Addendum)

Other HRSD comments concerning DO

30. Chapter 6.7 pp 13 made reference to very low non-attainment rates in some segments such as the JMSOH (0.06%), CB6PH (0.66%). HRSD recognizes that these non-attainment rates are in excess of the “allowable” exceedence provided by the default 10% CFD reference curves. However, these segments should not be classified as in non-attainment due to the following factors:

The previous nutrient load allocations established for the Chesapeake Bay by the Water Quality Steering Committee considered non-attainment rates of less than 1% to be in attainment for working purposes. It was recognized and established that such small levels of variation was within the error of measurement of the sampling program and/or assessment tool.

Future versions of the assessment methodology will incorporate a statistical test to ensure that findings of non-attainment (the area above the reference curve) are statistically significant. Until those procedures are developed the DEQ should follow the working definitions used previously by the Bay Program (i.e. that non-attainment rates <1% should be considered in attainment).

Recommendations

In order to address our concerns regarding the DO listings, HRSD recommends the following to the DEQ:

The DEQ should request that the EPA Bay Program provide guidance and software support to allow the existing analyses to be repeated and duplicated. Subsequently, it would be possible to perform sensitivity analyses related to issues of concern (i.e. influence of tidal creeks, bottom only values, etc.).

The impairment listings for the 30D mean DO should be replaced with “Insufficient Data to Assess Criteria” designation for all Chesapeake Bay waters. Such a classification is the defensible approach until the assessment methodology is completed and monitoring program expanded (as recommended below).

The DO monitoring program should be significantly expanded spatially. Although deep water monitoring is routinely conducted in the channels additional station profiles are needed for areas between the channels and the shoreline. An increase in vertical profiles would improve the quality of the horizontal and vertical interpolation and reduce the apparent bias caused by low DO observed in adjacent tidal creeks and bottom only collections.

The DO monitoring program must be significantly expanded temporally. The new DO standards (30D included) require more frequent monitoring than is now conducted. An increase in the temporal frequency (to weekly during the summer months) would allow proper assessment of the various expressions of the 30D DO standard. The general need to improve the DO monitoring program is rather urgent given the new listings that are proposed.

Consideration should be given to assessing the tidal creeks and sub-estuaries as separate segments. Consistent with previous methods statistical analysis should be performed to determine which monitoring stations yield comparable results and can be grouped together for monitoring and assessment purposes.

Response

The 2006 assessment is a transitional assessment for the new dissolved oxygen criteria. Possible refinements to protocols are described in the draft report (including the need for a statistically based deviation from the reference CFD and reproducible interpolation tools) and will be shared with stakeholders before the next assessment is completed. DEQ feels that the analyses performed were valid based upon the current EPA guidance ((EPA 903-R-03-002 “Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries” and the 2004 Addendum). The EPA guidance indicates monthly data at the spatial scale currently employed is appropriate for assessment of 30 day mean criteria (EPA 903-R-03-002 “Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries” and the 2004 Addendum)

Assessment of impairments on the spatial scale of large segments was an integral concept during the development of the Bay specific criteria and defined as the method of assessment (EPA 903-R-03-002 “Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries” and the 2004 Addendum). There is some flexibility for smaller size waterbody assessment if sufficient number of stations or data is available for assessment at this scale and this will be used if available. The “grouping” of different station data for assessment is essentially achieved through the spatial interpolation of data which gives a more accurate representation of conditions throughout the spatial area of assessment than grouping/using only raw data from several select individual stations.

HRSD GENERAL COMMENTS

31. Municipalities believe that the impairment in the Elizabeth River has not been accurately categorized or diagnosed, resulting in the potential for TMDLs that will fail to provide improvements. DEQ must also investigate the impact of permanent human modifications and use of the river (dredging, reduced currents and aeration, sedimentation, shipping) before causes for impairment can be accurately assessed. Listings for the Elizabeth River must be revisited prior to initiating a TMDL.

Response

The process for TMDL development employed by DEQ allows for opportunity to review relevant information prior to and during the development of a TMDL.

Table 1. Station DO profiles with average DO<5.0 mg/l - JMSMH - ALL STATIONS

Date	Station	n	Mean DO
7/29/2002	2-JOG	1	3.49
7/10/2002	2-DEP	1	3.65
9/2/2004	11J14	1	4
7/15/2003	2-NAN	2	4.15
8/26/2003	LE5.2	5	4.2
8/4/2003	10J26	1	4.3
7/29/2002	2-PGN	5	4.43
8/4/2003	10JO7	1	4.5
9/10/2002	2-WWK	1	4.52
7/15/2003	2-WWK	1	4.52
8/27/2002	09J11	1	4.6
8/4/2003	10J05	1	4.6
9/10/2002	2-DEP	1	4.67
9/2/2004	11J18	1	4.7
7/10/2002	2-WWK	1	4.77
8/4/2003	10J10	1	4.8
7/19/2003	10J14	1	4.9
9/2/2004	11J17	1	4.9

Above represents 18 out of 96 total profiles (19%)

Table 2. Station DO profiles with average DO<5.0 mg/l - JMSMH - DEQ CBP stations only

Date	Station	n	Mean DO
8/26/2003	LE5.2	5	4.2

Above represents 1 out of 22 total profiles (4.5%)

Table 3. Station DO profiles with average DO<5.0 mg/l - JMSOH - ALL STATIONS

Date	Station	n	Mean DO
8/4/2004	11J23	1	3.3
8/4/2004	11J22	1	3.4
8/17/2004	2-JMS	1	4.27
9/2/2004	11J28	1	4.7
8/27/2004	09J14	1	4.8

Above represents 5 out of 54 total profiles (9.2%)

Table 4. Station DO profiles with average DO<5.0 mg/l - JMSOH - DEQ CBP stations only

Date	Station	n	Mean DO
None			

Above represents 0 out of 23 total profiles (0.0%)

The City of Norfolk Department of Utilities has reviewed the draft 2006 Water Quality Assessment and Impaired Waters Report and offers the following comments.

This report was prepared using DEQ sample sites and City of Norfolk field data for 2003 and 2004. Norfolk has been collecting monthly water quality monitoring data for its reservoirs since 1979.

32. Lake Smith (Upper), Segment ID VAT-C08L-02.

The 2006 Report notes that the cause of the impairment is "unknown." A review of the characteristics of Lake Smith reveals the cause, however. Lake Smith was constructed as a shallow, impounded water supply reservoir. The average depth is five feet and when drawn down by summer use, this depth is halved. Typical of shallow water bodies in the southeast, there is little opportunity for oxygen to be introduced into the water column during the warm summer months. Furthermore, this segment of Lake Smith meets the scientific criteria for a stratified lake, although it does not have a 4°C temperature change from the surface to bottom as defined in the 2006 Water Quality Assessment Guidance Manual. A thermocline is defined as 1°C temperature change within one meter. This occurs in Lake Smith during the warm summer months and prevents dissolved oxygen from being reintroduced into the bottom waters. Its dissolved oxygen levels are naturally low for this reason, and so it should not be expected to meet the dissolved oxygen Water Quality Standards for unstratified Class III waters.

We recommend that Lake Smith (Upper), Segment ID VAT-C08L-02 be reclassified as EPA Category 4C (water impaired or threatened due to natural conditions).

Response

As this segment of Lake Smith [AU-ID: VAT-C08L_LAS02A02, Lake Smith (Upper); TMDL-ID: VAT-C08L-02] does not meet the DEQ guidelines for determination of non-anthropogenic dissolved oxygen impairment (as defined in the 2006 Water Quality Assessment Guidance Manual, Section 6.6) this segment would not be eligible for a categorization as EPA Category 4C (water impaired or threatened due to natural conditions) per the IR development guidelines as set forth in the DEQ 2006 Water Quality Assessment Guidance Manual as noted above.

33. Little Creek Reservoir (Lower), Segment ID VAT-C08L-05.

This reservoir segment has been classified as impaired due to observed pH levels. The observed pH levels are largely the result of natural algal photosynthesis occurring within this very productive reservoir, which tends to raise the pH. For this reason, Little Creek Reservoir, Segment ID VAT-C08L-05 should be reclassified as EPA Category 4C (water impaired or threatened due to natural conditions) for pH.

In addition, Little Creek Reservoir is stratified in the warm summer months as described for Lake Smith. In light of this natural stratification in the warm summer months it is recommended that Little Creek Reservoir Segment ID VAT-C08L-05 be reclassified as EPA Category 4C (water impaired or threatened due to natural conditions) for dissolved oxygen.

Response

At the present time there are no DEQ guidelines for determination of non-anthropogenic pH impairment for lake systems (as defined in the 2006 Water Quality Assessment Guidance Manual, Section 6.6). As there is a strong probability that anthropogenic activities may be contributing to the cause of the observed pH impairment (e.g. nutrient enrichment resulting in algal overproduction and elevated pH concentrations). Current guidance instructs classification as EPA Category 5 until data precludes impairment caused by anthropogenic activities. Therefore, this segment [AU-ID: VAT-C08L_LTR02A02, Little Creek Reservoir (Lower); TMDL-ID: VAT-C08L-05] would not be eligible for categorization as EPA Category 4C (water impaired or threatened due to natural conditions) per the IR development guidelines as set forth in the DEQ 2006 Water Quality Assessment Guidance Manual as noted above.

As this segment of Little Creek Reservoir [AU-ID: VAT-C08L_LTR02A02, Little Creek Reservoir (Lower); TMDL-ID: VAT-C08L-05] does not meet the DEQ guidelines for determination of non-anthropogenic dissolved oxygen impairment (as defined in the 2006 Water Quality Assessment Guidance Manual, Section 6.6) this segment would not be eligible for a categorization as EPA Category 4C (water impaired or threatened due to natural conditions) per the IR development guidelines as set forth in the DEQ 2006 Water Quality Assessment Guidance Manual as noted above.

34. Lake Whitehurst (Azalea Garden Embayment) Segment ID VAT-CO8L-03.

This segment of Lake Whitehurst has been classified as impaired for dissolved oxygen and pH. In reviewing the dataset for City of Norfolk's (MUN-WH4) sample site, the number of observations was misrepresented in the report. A total of 21 observations were taken from June-September for 2003 and 2004, not 14 as indicated in the report. Of those observations, only two were violations of the dissolved oxygen standard, which calculates to 9.5%, less than required for impairment. Please note that the City of Norfolk collected a total of 61 observations in 2003 and 2004, further lowering the percentage of violations to 3%.

We recommend that Lake Whitehurst (Azalea Garden Embayment) Segment ID VAT-CO8L-03 be removed from the impaired water list for dissolved oxygen.

In addition, we believe the total number of observation taken by the City of Norfolk should be considered when evaluating the overall health of the waterbody when no observations by DEQ have been made during the time period for this report. A total of 61 observations were made during 2003-2004, resulting in 3 violations out of 61 observations for pH, again well below the threshold for impairment.

We recommend that Lake Whitehurst (Azalea Garden Embayment) Segment ID VAT-CO8L-03 be removed from the impaired water list for pH.

Response

This segment of Lake Whitehurst [AU-ID: VAT-C08L_LAW02A06, Lake Whitehurst - Azalea Garden Rd Embayment (PWS); TMDL-ID: VAT-CO8L-03] is represented by the City of Norfolk lake data station WH4. The DEQ approved data set for this station (as provided to the TRO office by Central Office Citizen Monitoring Liaison) contained only 14 observations for dissolved oxygen (2 exceedences out of 14 observations = 14.3 % frequency of impairment) and 20 observations for pH (3 exceedences out of 20 observations = 15 % frequency of impairment) after removal of data which did not meet the DEQ QA/QC data review process. The frequency

of impairment resulting from the DEQ approved data set for this station supports the 2006 IR listing of this segment as impaired for dissolved oxygen and pH.

35. Western Branch Reservoir (Lower) Segment ID VAT-G14L-02

This segment of Western Branch Reservoir has been listed as impaired for dissolved oxygen using three DEQ samples sites and two City of Norfolk sites. This segment of Western Branch Reservoir has a hypolimnetic aeration system, installed in 1993, to place oxygen below the thermocline during summer stratification.

Without this system, there would be negligible amounts of dissolved oxygen below the thermocline, resulting in less area for the support of aquatic life from April through October. The Virginia Department of Game and Inland Fisheries recognize Western Branch Reservoir as one of the best fisheries in the state for warm water fishes, and as such fully supports aquatic life.

Additionally, as stated in the Impairment Comments, Trophic State Index (TSI) cannot be used to assess stratified conditions. The calculation of TSI does not account for stratification, nor does it distinguish the origin of the conditions that give rise to the index values. Total phosphorus can be generated from geologic as well as anthropogenic causes; Secchi transparency can be reduced due to both biotic factors (phytoplankton growths) and abiotic factors (silt, humic acids, etc); and chlorophyll is a response to the nutrients, whose origins cannot be ascertained by the TSI value.

The TSI values for the three DEQ sample sites average 53 and the two City of Norfolk sites average 55. This indicates mesotrophic conditions and would require that Western Branch Reservoir be classified as EPA Category 4C (water impaired or threatened due to natural conditions) according to the 2006 Guidance Manual.

Observed effects listed to support the 5A classification are Chlorophyll-a and Total Phosphorus. The Total Phosphorus concentrations for both DEQ data and City of Norfolk data are well below the screening value of 50 ug/L and do not indicate impairment. Chlorophyll-a does not have a screening value, but is well below the values in Section 6.5.1 Table 4 of the 2006 Guidance Manual.

We recommend that Western Branch Reservoir (Lower) Segment ID VAT-G14L-02 be reclassified as EPA Category 4C (water impaired or threatened due to natural conditions).

Response

This segment of Western Branch Reservoir [AU-ID: VAT-G14L_NWB04A06, Western Branch Reservoir - Lower (PWS); TMDL-ID: VAT-G14L-02] is characterized by the DEQ lake data stations 2-NWB004.67, 2-NWB004.14 & 2-NWB002.93 and by City of Norfolk lake data stations WB1 & WB2. None of these stations indicated stratification (as defined in the 2006 Water Quality Assessment Guidance Manual, Section 6.6) and therefore would not be eligible for EPA Category 4C listing based on TSI values. For the majority of stations monitored within this segment (three of these five stations: 2-NWB004.67, 8 exceeds/45 observations = 17.8% frequency of exceed criteria; WB1, 5 exceeds /33 observations = 15.2% frequency of exceed criteria; & WB2, 4 exceeds /32 observations = 12.5% frequency of exceed criteria) the frequency of dissolved oxygen exceedences of the DEQ criteria required listing of the segment as EPA Category 5A. The observed effects have no relationship to EPA Category assignment. The

Chlorophyll-a and Total Phosphorus were mistakenly included as observed effects and this has been corrected in the 2006 IR final report.

36. Lake Burnt Mills (Upper) Segment ID VAT-G14L-02

This segment of Lake Burnt Mills has been listed as impaired for dissolved oxygen using two DEQ sample sites and one City of Norfolk site. This site is stratified in the summer months and would require TSI evaluation according to the 2006 Guidance Manual. The TSI values for the epilimnion for the two DEQ sites average 56 and the City of Norfolk site averages 54 during the summer months. This is indicative of mesotrophic conditions and requires listing of the water body as EPA Category 4C (water impaired or threatened due to natural conditions) according to the 2006 Guidance Manual.

Comments also indicate that the segment exceeded the DEQ screening values for total phosphorus and chlorophyll-a. Chlorophyll-a has no screening value. Analysis of the DEQ data indicates an average summer total phosphorus value of 22 ug/L and a City of Norfolk value of 29 ug/L, well below the screening value of 50 ug/L as specified in Section 6.5.1 of the 2006 Guidance Manual.

Please note that Hurricane Isabel passed through Hampton Roads on September 18, 2003 causing damage to the entire area. As such, any data gathered during the immediate period after September 18, 2003 for inclusion in the June-September assessment period should be discarded as this data is not representative of normal conditions and has no basis to assess impairment.

We recommend that Lake Burnt Mills (Upper) Segment ID VAT-G14L-02 be reclassified as EPA Category 4C (water impaired or threatened due to natural conditions).

Response

This segment of Lake Burnt Mills [AU-ID: VAT-G14L_ NWB02A06, Lake Burnt Mills - Lower (PWS) TMDL-ID: VAT-G14L-02] is characterized by the DEQ lake data stations 2-NWB010.54, 2-NWB009.48 and by City of Norfolk lake data station BM2. Each of these stations indicated stratification (as defined in the 2006 Water Quality Assessment Guidance Manual, Section 6.6) and therefore trophic state index (TSI) values were calculated for the two DEQ stations where secchi, Chlorophyll-a and Total Phosphorus data were collected. Per the 2006 IR assessment procedure defined in the 2006 Water Quality Assessment Guidance Manual, Section 6.6, Step 3 “A trophic state index value of 60 or greater for any one of the 3 indices will indicate that nutrient enrichment from anthropogenic sources are adversely interfering, directly or indirectly, with the designated uses”. For the two DEQ stations where TSI values were calculated the following values were noted: for 2-NWB010.54, Chlorophyll a TSI = 63, TP TSI = 58, Secchi TSI = 60 & for 2-NWB009.48, Chlorophyll a TSI = 62, TP TSI = 51, Secchi TSI = 60. As the assessment guidance indicates that where any of the three TSI values are 60 or greater indicates “nutrient enrichment from anthropogenic sources are adversely interfering, directly or indirectly, with the designated uses”, the TSI calculations for these two stations indicate the dissolved oxygen impairment should be classified as EPA Category 5A. This segment of Lake Burnt Mills was therefore classified as EPA Category 5A, since the two DEQ stations where secchi, Chlorophyll-a and Total Phosphorus data were available resulted in TSI values indicating “anthropogenic sources are adversely interfering, directly or indirectly, with the designated uses”.

37. Lake Prince Segment ID VAT-G14L-01

This segment was evaluated using two DEQ sample sites and eight City of Norfolk sites. Several of the sites are not appropriate when assessing Lake Prince. Site EC1 is a stream segment in the headwaters of Lake Prince. LG1 is the pump over for Lake Gaston at the headwaters of Lake Prince and WB3 is located in Western Branch Reservoir approximately 500 meters below the Lake Prince spillway.

Response

The above comments will be incorporated into the next IR report. These two stations did not supply data which would impact the assessment of this segment for the current IR report.

38. Miscellaneous

In Chapters 3.3a and 3.3d the Reservoir Acres is inconsistent with Part VII Appendices. As an example, on page 3.3a-29, Lake Burnt Mills is listed as having a size of 1,304 acres. On page 3.3b-90 and page 671 of 2156, the reservoir is listed as having a size of 451 acres.

In Appendix C, page C-2, the acreage of Norfolk's reservoirs is incorrect. Corrected values were sent previously with comments on the 2004 Integrated Report, but apparently were not incorporated into the record. Below are the correct acreage and location for each reservoir.

Reservoir	Location	Acreage
Western Branch Reservoir	Suffolk	1,265
Lake Prince	Suffolk	946
Lake Burnt Mills	Isle of Wight	711
Lake Whitehurst	Norfolk	480
Little Creek Reservoir	Virginia Beach	193
Lake Smith	Virginia Beach	193

Response

The acreage of Norfolk's reservoirs contained in the 2006 IR Report is based on the polygon areas as defined in the EPA-NHD GIS polygon database which DEQ uses as the reference data for streams /lakes /estuaries assessed sizes. For consistency, these are the reservoir areas/sizes which are referenced in the DEQ 2006 IR Report.

William Perkinson

39. This letter is in regard to DEQ's public invitation for comment upon the July 11, 2006 draft *Virginia's 2006 Water Quality Report*, before it is made final. The Water Quality Assessment Report states as its purpose the summarizing of water quality conditions to determine whether (cleanup, etc) plans are needed to restore waters with impaired water quality. The assessment indicates there are both human (anthropogenic) activities and natural processes that cause impaired water quality. Anthropogenically impaired waters are placed on a federally mandated 303(d) list. Waters that are impaired due to human activities require a plan to restore their water quality.

Both Bailey Creek (sections south and west of Rt 10 bridge) and Cattail Creek appear to be listed as impaired based on dissolved oxygen (DO) criteria in the James River. I found nine references (pages attached) for the 303(d) listing for impaired DO in the water quality report and they referred to low DO in the James River. If the DO problem was traced back up the creeks to anthropogenic cause(s), assignment to the 303(d) list would be logical. A couple of years ago, I walked Cattail Creek (which discharges into Bailey Creek) and measured DO at <4 mg/L during hot weather. I would agree that *if* these were free-flowing streams without wetland areas, there would be reason to suspect anthropogenic causes as the source(s) of low DO.

Given these creeks have considerable marshy areas with natural vegetative BOD loadings, cattails, and phragmites, all increased by beaver dams, the low DO is expected based on natural processes alone. Treatment Wetlands, by Kadlee and Knight, 1995 summarizes that the root zones of cattails is 1 to 2 mg/l and is 0 mg/L for phragmites. They also cite studies in which inlet D.O. to the wetlands is 5 to 8 mg/L and outlet is 0.1 to 1 mg/L. Thus, wetlands consume rather than transfer oxygen.

If Bailey or Cattail Creeks are on the 303(d) list, stormwater dischargers may be required to oxygenate smaller tributaries from their own sites that discharge into these Creeks. If the creeks and smaller tributaries are also naturally low in oxygen content, artificial oxygenation may be inappropriate. Anthropologically induced oxygen would be consumed in counteracting natural metal redox reactions and denitrification processes. Therefore, not only would such induced oxygen disrupt natural processes, it would be consumed rather than be transferred to the river where the deficiencies were a concern. The above Kadlee and Knight reference summarizes Vile and Weilder, 1993 and Gimbrell and Patrick, 1978 works which discuss wetlands reactions that routinely consume oxygen.

Low DO is not a specific pollutant (like phosphorous or nitrogen); rather, it appears to be a natural wetlands-sourced condition. Based on wetlands science and chemistry, caution and science should be exercised when classifying such waters as dissolved oxygen impaired. Assignment of Bailey and Cattail and perhaps other Creeks with considerable wetlands as 303(d) may not be appropriate or prudent, considering that dischargers may be categorically required oxygenate water which may in turn disrupt natural wetlands processes without (as described above) benefiting the James River in any way.

I appreciate DEQ's invitation to comment as well as your consideration of my concern that placement of Bailey and Cattail Creeks on the 303(d) list for low dissolved oxygen may be an inappropriate or premature and unbeneficial designation. I would be glad to work with DEQ to address the dissolved oxygen matter.

Response

The nontidal portion of Bailey Creek is currently assessed as fully supporting the dissolved oxygen standards. Therefore, we assume you refer only to the tidal portion of Bailey and Cattail Creeks. These areas are included in the Lower Tidal Freshwater James River segment which failed the summer 30-day dissolved oxygen criteria set by the new Chesapeake Bay water quality standards. Although you are correct that tidal marshes can naturally deplete dissolved oxygen, the water quality standard segment includes the entire tidal estuary between the Appomattox River confluence at Hopewell and the oligohaline boundary near the Chickahominy River confluence.

In addition, although the area technically fails only as a portion of the larger segment, please note that the low dissolved oxygen in Bailey Creek has not been attributed to natural conditions. As stated in the October 1999 Hopewell Estuary Region Monitoring and Assessment Project (HERMA) report submitted to DEQ by the Crater Planning District Commission and conducted by the Hopewell Regional Wastewater Treatment Facility and Malcolm Pirnie, Inc.: “Low D.O. conditions in Baileys Creek are caused by a combination of pollutant sources, hydrologic effects, and algal dynamics. In the lower non-tidal portion of the creek, low D.O. appears to be caused by stagnancy of water behind beaver dams in conjunction with high BOD loads from adjacent wetlands and stormwater runoff. In the tidal portion, D.O. impairments are caused by the tidal influx of under-saturated water, which in turn is impacted by ... point and non-point source BOD, elevated temperature of point-source discharges, and sediment oxygen demand.... The upper tidal portion of the creek is impacted by the D.O. demands of both the tidal and non-tidal portions and thus has the worst D.O. throughout the system.”

Mr. Hunt

40. I've been looking at the water quality results for the lower end of Craig Creek, in Botetourt Co., near Eagle Rock. There seems to be no recent testing. Can you verify this? What can be done about it?

Response

There is a 12 mile portion of lower Craig Creek that was monitored and assessed for the 2006 Integrated Report. The assessed portion extends from the mouth of Roaring Run downstream to Craig Creek's confluence with the James River. All results from DEQ station 2-CRG001.20 find Full Support for the Uses assessed. The Craig Creek station did produce an 'Observed Effect' for nickel and zinc in the sediment. Virginia currently has no water quality standard for sediment. However, a most Probable Effects Concentration is used to identify those 'waters of concern' where a return visit could be made.

The Web Map you viewed (if this is where you got your information) illustrates only those waters found to have impairment of Designated Uses due to an exceedence of Water Quality Standards criterion. More about 'Observed Effects' and values used for comparison can be found on the 2006 Integrated Report Web page where you can download DEQ's Assessment Guidance; Appendices E1 and E2 contain Most Probable Effects screening values used for the 2006 Assessment.

To view all waters assessed please return to our website. There is now available from the Draft 2006 Integrated Report Web Page a second mapping application that allows the user to view all waters assessed for 2006. This application includes waters that are fully supporting Uses, those that do not and those that have not been assessed. Please click on this link:

http://gisweb.deq.virginia.gov/adbims/viewer.htm?SERVICE=adbweb_any_use_2006

This application works the same as the "Impaired Waters Application" which may have been what prompted your question.

Web Navigational Instructions if not using the link above.

1. Navigate to the DEQ Home Page <http://www.deq.virginia.gov/>
2. Click on 2006 water quality report (Right Panel)
3. Scroll all the way to the bottom of the page until you see the heading “INTERACTIVE MAPPING”
4. Click on 2006 Assessment Database GIS Application
5. Click on 2006 Assessment Database GIS Application again.

Citizens are afforded the opportunity to request monitoring be conducted on a stream other than those currently being monitored by DEQ. Please use the following link <http://www.deq.virginia.gov/cmonitor/> if you are interested in nominating a stream for inclusion in the DEQ Annual Monitoring Plan. Click on the second item in the panel on the right. There you will find a nomination form and information regarding the process of nominating a stream for the Annual Monitoring Plan.

Mary Ann Moxon

41. Virginia's DEQ faces a big challenge to develop and implement cleanup plans to restore the health of the listed streams, rivers, and the greater Chesapeake Bay. Cooperation with many other state and federal agencies is a necessity--though how to do it is the bigger question.

Since E coli and fecal coliform pathogens are evident in the testing done in DEQ's recent assessment, I suggest that you re-name the "Source Unknown"category to "Boaters Unknown." As a boater, I see a majority of recreational boaters returning to their marinas after a weekend of cruising and bypassing their pumpout stations. I can only guess where the mysterious contents of their holding tanks end up.

Some excuses I've heard are 1) "the pumpout's broken" (which is VERY frequently true), 2) "I'm in a hurry and we'll pump out later", and 3) "we pumped out far out in the bay away from the river."

Long Island Sound and Barnegat Bay boaters have an advantage that Chesapeake Bay boaters do not--FREE pumpout boats that visit busy anchorages. Why does DEQ not fund such a venture? Even \$250 million could provide more working pumpouts. And why do so many pumpouts remain on the perpetually in-need-of-repair state? Marina owners should be held responsible for their upkeep.

Non-point source pollution is a misleading term when we very well know the sources, elusive though they be. I recommend that DEQ address the lack of functioning pumpouts and their infrequent use by boaters in drafting individual plans to reduce pollution in our many Virginia watersheds.

Response

DEQ's Pollution Prevention Program works directly with marinas by means of the “Clean Marinas Program”. For more information about this and other pollution prevention programs visit our website at <http://www.deq.virginia.gov/p2/programs.html>.

Wayne Brickey

42. I read with great interest the water quality article published in the Bristol Herald Courier newspaper today. I am appalled that we do not seem to make any progress at cleaning up the rivers, lakes and streams in Southwest Virginia, or in all of Virginia for that matter. Of particular concern to me is the degradation of the water in the beautiful Clinch River. For the past 4 or 5 years I have noted a gradual decline in the fish populations in this river and its tributaries. The decline in the fishery below the confluence of the Guest River into the Clinch River basin is alarming. What does your report specifically say about the status of the water quality in the Clinch River and the streams that empty into it? What can the citizens of Virginia do about the river? I want to write the Game and Fish Commission about the problem, but wonder if it is worth the effort.

Response

DEQ is working daily to develop cleanup plans through the Total Maximum Daily Load Program to address water quality impairments. A TMDL was developed and an Implementation Plan approved outlining needed improvements in the Guest River watershed. These documents are available on the DEQ web site, www.deq.virginia.gov/tmdl. Lonesome Pine Soil and Water Conservation, (276) 926-6621, is the agency coordinating clean-up efforts for the Guest River. There are several impaired segments, predominately bacteria violations, in the Clinch River watershed. For detailed information, the interactive map may be accessed at <http://www.deq.virginia.gov/wqa/305b2006.html>.

James Beckley, DEQ Water Quality Data Liaison, can advise citizens about their monitoring efforts. There are numerous citizen groups that focus on solving water quality issues; contact Carol Doss of the Upper Tennessee River Roundtable, uppertnriver@yahoo.com, to get in touch with a group near you. For fishery information, please contact Bill Kittrell, bkittrell@dgif.state.va.us.

Mattie Coll

43. Good morning. I was very troubled by the report that 9000 miles of our water in Virginia is polluted. What can be done about the enormous problem. According to the article in the Richmond Times Dispatch the Department of Environmental Quality is not alarmed by these latest findings. I am alarmed by them. Is more money needed to clean up these waterways? This needs to be a top priority!

Response

DEQ is quite concerned with the number of impaired miles identified in the 2006 water quality report and is working daily to develop cleanup plans. Unfortunately, it takes time and as you point out, money to implement needed cleanup plans. Additional finances have recently been included for water quality improvement, especially in the Chesapeake Bay and its tidal tributaries.

Sam Forrest

44. Clean those rivers! I don't care who gets hurt or how much the cost. I want it now.

Response

DEQ has a devoted program whose purpose is to develop total maximum daily loadings (TMDL Program) of pollutants causing impairments. Once those loadings are developed, an implementation plan is developed to reduce loadings in order to meet water quality criteria.

Jenny Pritchard

45. First let me thank you and your staff for the work that you do. I'm a resident of First Colony a riverfront community in James City County; I grew up in Poquoson - on the river. My entire life, I've enjoyed our beautiful tidewater area, and as most, have seen a significant decline in water quality/aquatic life over the last 30 years.

When I read the article in the Daily Press on Wed. I was left with this question: As a citizen, how do I help your organization and the like get the funding and laws passed needed to help clean and maintain healthy waters? Who do I contact in our political system?

I believe we need an "Information Campaign" that informs residents and visitors on a daily or weekly basis about the quality of water in their area. If residents turned on their TV's at night to watch the weather and saw not only tide, humidity, temp ... but also saw a water quality report for the lower half of the James, for example, and it was not good - people would act because it impacts their daily life.

After the recent heavy rains there was medical waste floating up on the First Colony beach. I know that's something you see all the time, but when mom's see this and don't feel safe letting their children go in to play, you'll get a number of people who want to act. Tell us how.

Response

As one of its strategic priorities, DEQ continues to support environmental education and public outreach on environmental issues. We feel as though progress in these areas has been made but more work remains. For additional environmental information you may want to visit our website at <http://www.deq.virginia.gov/>.

Alan Miller

46. Virginia is blessed with the Chesapeake bay and it's many wonderful tributaries. It is a shame that we have been such terrible stewards of this precious natural resource. It is an embarrassment to all in the state of Virginia that we have to import oysters and crabs from other areas because our waters are polluted and commercially overfished. It is obvious that nitrogen and chemicals flow into our waters when a new home is built and the homeowners are allowed to shave all the trees and plant lawns all along the waterways. I commend the many groups who work so hard to turn the tide of events . As long as local county supervisors keep giving the "special exceptions" to builders as they circumvent the policies of the Chesapeake bay act, the

efforts to make progress on restoring our bay appear hopeless. I hope in my lifetime I see a genuine cleanup of our wonderful bay. It will surely be a tragedy for the next generations if we don't.

Response

We all need to work together to educate the citizens of Virginia on water quality issues and to enhance cleanup efforts in all waters of the state, especially those draining into the Chesapeake Bay.

Melissa Watkins

47. I was wondering where I can find the results for the Yorktown Beach ? We frequent there often and was a little concerned after reading this mornings article. Is there a web page where I can get the bacteria levels on this particular beach ?

Response

The link to the beach monitoring data is below.....(cntrl/click on the link). To see the actual sampling data go to the "quick links" for monitoring data on the right hand side of the page and choose a year. All of the beach monitoring data collected by VDH (Health Dept) is available, including Yorktown Beach.

<http://www.vdh.virginia.gov/epi/dzee/beachmonitoring/index.asp>

J. Mason

48. I have spent a considerable length of time reading the new report and while I admit I did not read the entire report nor am I a student of this subject, I have the following comments:

1. Virginia is supposed to be an outdoor recreation state and as such much of our allure is boating and swimming. It does not seem appropriate that we have only sampled ~15-30% of our river basins for acceptability for swimming.
2. The areas that are found acceptable for swimming should be shown on some map.
3. We need a commitment as to when we will have 100% of our waterways sampled for swimming /recreation.
4. More precise info needs to be included so that the citizens can bring pressure on the government/public facilities that are ruining our waterways.

Response

All public beaches are being monitored on a weekly basis and the results are posted on the VDH website at <http://www.vdh.virginia.gov/epi/dzee/beachmonitoring/index.asp>. DEQ makes every effort to monitor waters where swimming and boating take place. Many small streams and headwaters are not suitable for full body immersion and are less susceptible to human health concerns and are a lower priority for bacteria monitoring. DEQ is updating our monitoring strategy in 2007 to accomplish monitoring throughout all remaining watersheds in Virginia within the next several years. Finally, most government and public facilities are regulated via

discharge permits and periodic inspections. Those entities found to be non-compliant face potential enforcement action.

Anne Nielsen

49. Thank you for your part in the excellent presentation by Mr. Shiflet at yesterday's public meeting at the DEQ Regional Office in Harrisonburg. Although public notice was no more than a few hours for most of us, the turnout was good, and those who were present keenly interested in the subject.

I am a retired biologist with a background in microbiology. I have been following the fish kill stories in the North and south forks of the Shenandoah River for some time, and with growing concern. The kills, and the presence of lesions on dead and dying fish has, as yet, no known cause or causes. I am reminded of the decade long global phenomenon of amphibian deaths, most recently linked, I understand, to an invasive chytrid species not previously known to be harmful to healthy frogs. Accumulating environmental stresses also probably play a role. Several times now I have seen persistent red tide events off the Gulf coast of Florida, lasting up to eight months in one case, and causing dramatic kills of both fish and molluscs. This also has a microbial agent which, in turn, is apparently responding to nutrient loading in Gulf waters. The information provided by Mr. Shiflet yesterday that the kill events appear to be moving from east to west, upstream, in Virginia suggests a moving, possibly microbial agent. My question is this: Do you (or other agencies involved) have microbiologists with a background in protista and fungi involved in the research on fish kills in the Shenandoah? And if so, are their interim findings available to the public? This is a case where a person with some taxonomic background may be more valuable than a pathologist, esp. if dealing with an opportunistic infectious agent.

Your involvement of the public in ongoing water quality assessment and reporting is valuable on several levels. Certainly, the more of us who become directly aware of growing threats to Virginia's environment, the more likely we are to urge our representatives to action and priority allocation of funds. Direct involvement also has a "snowball effect" in that each is likely to help enroll others in the effort to leave a healthier legacy in the Commonwealth.

So I thank you, and every member of your staff for facilitating that involvement. I am very much aware that the effort itself takes time and funds that you must sometimes feel could be better spent elsewhere. It takes years to grow citizen focus of this kind. Please stay the course!

Response

We do not have a microbiologist actually attending our Fish Kill Task Force meetings, but we are working closely with two fish health labs and their experts. These labs are the USGS Fish Health Laboratory in Leetown, WV and the US Fish & Wildlife lab in Lamar, PA. Dr. Vicki Blazer of the USGS Fish Health lab has been a very active participant in the Task Force's meetings and investigations, and both labs have microbiologists on staff who have been evaluating our fish samples during the investigation.

If Ms. Nielsen has suggestions on specific microbes we should be looking for, we would welcome her input. We would be glad to talk with her or put her in touch with the experts from US Geological Survey or the US Fish and Wildlife Service labs.

James City County

50. I have concerns related to the new impaired waters list and its impact on James City County. As I understand it, the new list is based on a different methodology of aggregating stream segments. The new method groups together much larger areas and if one segment fails to attain a use, the entire group is placed on the impaired list. This has resulted in virtually all the stream systems (well over a dozen) in the County to be now classified as impaired whereas before there were only three segments that were determined to be impaired.

A problem this creates is that if there is no evidence that a stream segment is impaired, TMDLs and implementation plans could be developed when there is no need to do so. This is particularly true for several of the streams that are located in very undeveloped portions of the County where the land use is predominately forested. And if there is in reality no problem and very little human activity in the watershed, it is difficult to image what activities could be modified to reduce pollutant sources in these watersheds.

The inclusion of virtually all the streams in the County on the list seems to trivialize the list – if everything is impaired, what is the point of having a list? I know that the list covers the entire state but if other areas are experiencing the same increase in impaired waters, again how can resources be focused to address the most serious problems?

Is there a way or could a way be developed that would allow for a stream to be “delisted” if it could be demonstrated that a specific stream system was not actually impaired even though the aggregated system that it is part of was impaired? That would help to focus the resources of the program on the areas that really demonstrated an impairment.

Response

DEQ is working with EPA Region 3 to determine what requirements are needed for delisting streams or other areas associated with the Chesapeake Bay and its estuarine tributaries. The newly adopted Chesapeake Bay Standards require the use of the Chesapeake Bay Program segmentation which lumps large diverse areas into a segment. Tidal action causes waters and the associated water quality to be shared across large areas and thus the need to include larger areas within a Bay segment.

Upper Occoquan Sewage Authority

51. By means of this e-mail the Upper Occoquan Sewage Authority (UOSA) is requesting that the report clearly explains that for listings where the TMDL have not been completed, when sources (causes) of impairments are listed, these are actually "potential sources or causes" and they have not been definitively identified until the TMDL is completed. The reason for this request is that this report is part of the public record and it should provide the information as clearly and accurately as possible. Identifying "sources/causes" without proof for a specific segment or water body could be misleading.

Other than the above comment, we believe this document is a great reference document.

Response

Best professional judgment by regional monitoring and assessment staff familiar with the local waters is used to best describe to the public the causes and sources for impairments.

City of Martinsville

52. After wading through the above referenced voluminous report and having a representative attend the related public information meeting in Roanoke, at least some of our many questions have been answered. For the most part, the report appears to be "much ado about nothing" as further implied by comments from DEQ published shortly after the report was released.

I do, however, have one specific serious concern, and that is the surprise listing of the Martinsville Reservoir as "impaired" as reported on the front page of the Martinsville Bulletin (attached). After wading through the report, we could only find that the City's potable water source was listed as impaired for "pH" (?). Mr. McLeod at WCRO helped by further digging into his database to find that there were two readings taken during the summer of '03 (June and July) that exceeded a pH of 9.0. These readings were taken shallow near water's edge. Readings from May and September in similar locations were below 8.0. The fact that the offending readings were taken during a drought while water levels were abnormally low and the fact that *daily* water withdrawal readings as officially recorded at the City's water treatment plant during the same period seldom exceeded a pH of 7.0 were not taken into consideration in classifying the entire lake (and the City's main raw water source) as "impaired".

This casual labeling process represents both poor science and irresponsible public information. It is simply not reasonable to conclude that an entire 160 acre lake is impaired based on such limited data any more than classifying the entire Atlantic Ocean based on finding a contaminant off the coast of Florida. While my concern may appear insignificant to DEQ, misleading listings such as this can become a significant public relations issues and consume tremendous staff time in finding and deciphering data, answering questions from officials and the public, and explaining to all that there is no cause for alarm. I know from experience that once a water body is listed, many years will pass before removal is even considered. I also know that a large volume of positive data must be generated to override a surprisingly small amount of negative data on which the original listing was based.

I therefore ask that Martinsville Reservoir (50050 VAW-L53L BAU0IA02) be removed from the List of Impaired Waters. This listing is misleading, unjustified and irresponsible.

Response

Thank you for your comments on the Draft 2006 Water Quality Assessment 305(b)/303(d) Integrated Report. We concur with your concern regarding pH measurements collected during drought conditions, although we cannot conclusively determine the effects on the reservoir at the time of sample collection.

Surface (0.3 meters) pH measurements were collected in front of the Dam finding two excursions of the pH water quality standard criterion above 9.0 SU from a total of 9 surface collections. The Commonwealth's pH water quality standard (WQS) criterion does not currently

address the total number of measurements required before an impaired assessment can be made and the criterion applies regardless of the collection point albeit off a river bank, mid-channel or at depth. Technically, via the WQS pH criterion, any single measurement outside the pH range (6.0 – 9.0) could result in an impaired listing. DEQ, for the 2006 and preceding assessments, has reached an understanding with the US Environmental Protection Agency (EPA) using a percentage (10.5%) rate of excursion. However, if two samples exceed, within a small dataset (less than 12 measurements), the water shall be placed in federal category 5 (Waters requiring a Total Maximum Daily Load Study [TMDL]).

Virginia has subdivided the federal Category 5 into several sub-categories. Each sub-category is described in the 2006 Water Quality Assessment Guidance Manual located on the DEQ website at <http://www.deq.virginia.gov/wqa/305b2006.html>. The Martinsville Reservoir is currently placed in Virginia sub-Category 5A (requiring a TMDL Study). As a result of your comments the Martinsville Reservoir will be changed to Virginia sub-category 5C (The Water Quality Standard is not attained due to "suspected" natural conditions. WQ Standards for these waters may be re-evaluated due to the presence of natural conditions.)

EPA Region 3 Comments

Thank you for the timely web release of the draft Commonwealth of Virginia 2006 Water Quality Assessment 305(b)/303(d) Integrated Report. The U. S. Environmental Protection Agency (EPA) appreciates the opportunity to review and comment on your draft submittal. Based on our review, we offer the following comments on the assessment activities covered in this report.

Overall Report

As with reports submitted in previous reporting cycles, this report was well organized and easy to understand. For this reporting cycle, the format of this report has undergone a major revision. Virginia followed both the US EPA Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Section 303(d), 305(b) and 314 of the Clean Water Act (2006 ILG) for listing purposes and in part the Guidelines for Preparation of Comprehensive State Water Quality Assessment [305(b) Report] (1997 Guidance) for format and content purposes, resulting in a comprehensive presentation of Virginia water quality issues and allowed for a clear review and evaluation of Virginia's assessment program. The continued use of the five category from the 2006 ILG in summarizing the status of Virginia's waters allows for a clear understanding of existing aquatic conditions. This five category presentation shows where additional effort is needed in the Commonwealth's monitoring and assessment programs and the extent of future activities required to reach the goal of comprehensive assessment of all waters.

Part I Executive Summary

Chapter 1.1 Executive Summary

53. The information presented in the three data tables in the executive summary very clearly shows the results of the assessment of monitored water quality for the three major types of waters. The overall condition of Virginia's monitored waters can be very quickly understood. There are, however, some issues relating to the information presented in these tables and the

information presented in Figure 1.1-1, Map with sub-watersheds assessed since 2002. It is stated in Figure 1.1-1 that 87% of the sub-watersheds (12-digit HUC) have been assessed. However, in Table 1.1-2, Assessment Results for Rivers/Streams and Table 3.1-2, Assessment Results for Rivers, the calculations presented indicate roughly 70% of the rivers and streams are listed in Category 3 as unassessed. This discrepancy needs to either be corrected or a discussion presented on reason for this apparent conflict. A reading of the report does not provide adequate information on the validity of this claim for 87% sub-watershed assessment. The additional discrepancy on number of watersheds (total, assessed and unassessed) also needs to be clarified. The data presented in Figure 1,1-1 and Table 1.1-2 are different that the presented explanations do not reconcile the differences.

Response

DEQ has clarified the statement that DEQ monitored **in** 87% of the watersheds.

Part II Surface Water Monitoring and Assessment

Chapter 2.1 Surface Water Monitoring Program

54. This chapter presents a concise yet fairly thorough discussion on the different monitoring programs conducted in the Commonwealth. These discussions allow for a clear understanding of the effort which goes into monitoring of these waters. In the discussion on Freshwater Benthic Macroinvertebrate Monitoring Program, it was stated that Tetra Tech developed a Virginia Stream Condition Index (VSCI) for the non-coastal streams. Is it correct to read this as being one assessment tool valid for waters in physiographic provinces as varied as the Piedmont and Blue Ridge? If so, this VSCI would appear to approximate the index developed by the EPA Wadeable Stream Study for the Southern Appalachian Ecoregion. However, it was also stated in the Freshwater Probabilistic Monitoring Program (ProbMon) that multiple reference sites will be developed. Will this be used for verifying the current VSCI or does VADEQ envision developing additional VSCIs? Please clarify.

Response

Using an independent, new probabilistic database (sample n=350) with data collected from 2001-2004, Virginia has validated the VSCI using a spatially diverse (ecoregionally and stream size) data set free of psuedoreplication. Statistical interpretation of the data indicates that the VSCI is appropriate for all of Virginia's non-coastal ecoregions.

Finding multiple reference sites (as stated in the Freshwater Probmon section of Chapter 2.1) has been and will continue to be a goal of the biological monitoring program. Reference sites from the ProbMon program have been used to help validate the VSCI. Additional biological data collected from new reference sites may be used in the future to recalibrate the VSCI to determine if separate indices are needed based on classification variables such as season, stream size, and ecoregion. A draft report of the VSCI validation study is available at www.deq.virginia.gov/probmon/

55. The section on Citizen and Non-Agency Water Quality Monitoring Program goes into some detail on what organizations submitted data and how that data was evaluated and used. Since Appendix D, Water Quality Data Set Considered for 2006 305(b) Assessments, provided

detailed information on how this data was used, these comments will cover both this section and the corresponding appendix. It appears that VADEQ attempted to incorporate as much as possible non-citizen, non-agency monitoring data. In Appendix D there was an absence of any reference to Virginia Department of Health (VADOH) data (collected by respective County Health Departments) for use in the beach contact recreation assessment program. Are these County Health Departments classified as citizen, non-agency providers of monitoring data or because they fall under the umbrella of the VADOH Beaches Program does VADEQ defer to VADOH on issues relating to Quality Assurance/Quality Control, Quality Assurance Project Plans, etc? At the least, there should have been a reference of deferring to the VADOH on all beach monitoring program activities.

Response

DEQ considers all BEACH data to be associated with the VDH BEACH program. DEQ has conducted on-site QA/QC evaluations of the local labs that conduct bacteria sampling and analysis for the BEACH Program.

Over the years VADEQ has attempted to incorporate with various degrees of success citizen monitoring data into its assessment activities. Under encouragement from VADEQ, many citizen groups have submitted monitoring data for incorporation into the assessment program. VADEQ has worked with many groups through its Water Quality Data Liaison (WQDL) program to improve the quality of the monitoring programs of its citizen groups for incorporation into its assessment program. A review of Appendix A points to a degree of success in this program.

56. One point which did stand out is that benthic invertebrate data continues to not be used for making impairment determination. Although there was discussion on how the Virginia Save our Streams (SOS) developed a new protocol to more closely correlate with professional methods developed by EPA and used by VADEQ, apparently this effort has not resulted in Level III benthic invertebrate data good enough for use in assessment and listing purposes. In Chapter 3.1, Water Quality Assessment Summary and as stated in Appendix D, no VA SOS (and others) benthic invertebrate data was used for making Aquatic Life Use determinations. Stating that VA SOS (and others) benthic invertebrate data was used for making assessment determinations is not true since by definition, placing waters in Category 3C or 3D means that their monitoring data was not of sufficient quality to make an assessment determination.

Response

DEQ is in the process of conducting a validation study on the SOS benthic assessment methodology and macroinvertebrate identification abilities of the SOS volunteers. Depending on the outcome of this study, DEQ will use the SOS benthic assessment data for making assessment decisions potentially as soon as the 2008 305(b) assessment.

While the SOS data was Categorized as 3C and 3D, DEQ is using these categorizations for screening purposes in order to assist with followup monitoring.

Chapter 2.2 Assessment Methodology

57. This Chapter provided a brief summary of the more detailed 2006 Assessment Guidance Manual. In the EPA comments to that Guidance, it was noted that both the 2004 and 2006 ILG discusses the inappropriateness and discourages the use of the 10% method for making impairment determination except in the case where a state's water quality standard included that

methodology. In several areas in this chapter, it was stated that follow-up monitoring will be scheduled where impairments could not be confirmed or where insufficient data was present to make a final determination. There was no discussion on a protocol for prioritizing these waters for follow-up monitoring. No goal was mentioned about having these waters assessed by the next year or next reporting cycle.

Response

As has been discussed with EPA R3 on several occasions, DEQ plans to incorporate the 10.5% exceedence rate for conventional parameters into the Water Quality Standards during the upcoming triennial review

Chapter 2.4 Twenty Year Trend Analysis of Water Quality Variables - 1985 - 2004

58. This chapter covers one of the requested subjects in the 2006 ILG and does so in a very thorough and detailed manner. The details regarding the different statistical methods and their strengths and weaknesses shows the complex nature of this data analysis and the difficulty in making sense of the results for guiding program activities. The several examples of how trend determinations changes depending on the length of the period evaluated indicated that caution has to be taken in making conclusions. The summary Tables 2.4-4 thru 2.4-7 allow for an understanding of changing conditions (20-year and 10-year period) in the nine major basins in the Commonwealth. (1) The only parameters for which enough data was available at the 95% or 90% confident level were bacteria, nitrogen, phosphorus, total suspended solids, dissolved oxygen, oxidized nitrogen, pH, temperature, and TKN. (2) Overwhelmingly though, the trend Commonwealth-wide and within each of the major basins showed no movement with the overall Commonwealth changes in 8 to 24 % range and 0 to 57% changes in individual basins for individual parameters. (3) With the dissolved oxygen values changed to percent saturation before the trend analysis was conducted, it is not clearly apparent how these dissolved oxygen trends can be related back to water quality standards in making programmatic decisions. Overall though, this was a very good discussion on the subject of trends in the waters of the Commonwealth.

Response

(1) The nine include all parameters that we evaluated and have explained in the text why ‘Total Nitrogen’ and ‘Total Phosphorus’ were utilized rather than individual species of nitrogen or phosphorus.

(2) The trends that were calculated for the two periods were not completely independent because data from the ten year period of 1995-2004 is included in the 1985-2004 data. The fact that much of the data was common between the two analyses makes changes during the intervening period much harder to demonstrate. That was why we originally considered comparing changes between two ten-year periods (1985-1994 and 1995-2004) rather than using 10 years vs. 20 years. We shall revisit this issue when the trend analysis is updated for the 2012 305(b) Report.

(3) Theoretical dissolved oxygen concentrations in water obey the ideal gas law. Partial pressure and temperature affect the concentration of dissolved oxygen in solution. In order to compare oxygen concentrations between sampling events the data must be normalized to a standard measurement, which in this case is percent saturation. The sensitivity of dissolved concentrations to water temperature would make DO trends calculated in any other way extremely questionable. Even using the seasonal Kendall test, which calculates trends for the same month across the years, variations in water temperature among years or even among days

within the same month would cause great variations in O₂ concentrations. Such extreme short-term variation would make it almost impossible to demonstrate subtle (but potentially significant) long-term trends. Using ‘% DO saturation’ appears to be the only logical solution, in spite of the difficulty in ‘back converting’ to mg/L units. Perhaps the best solution is to redefine all of our DO standards in terms of % saturation rather than in mg/L. The CBP has already considered doing that. In the text, we also discussed why DO trends are difficult to evaluate in terms of desirable or undesirable. Either increasing or decreasing DO values could be desirable, depending upon a number of other environmental factors.

Once a significant trend in oxygen percent saturation has been identified, the concentration in mg/L can be derived from the trend slope estimator by reversing the algebraic formula. In order to project the dissolved oxygen concentration to 2008, the assumptions made are the use of the average monthly temperature experienced over the trend time period and the use of the average specific conductivity or salinity. (It is necessary to determine that a trend in temperature, conductivity, and salinity has not occurred over the period.). In this way, we are able to predict dissolved oxygen impairments based on our trend calculations. To project the dissolved oxygen concentration when statistically significant trends are detected in temperature or salinity is a exercise that will require further research.

Part III Water Quality Assessment Results

Chapter 3.1 Water Quality Assessment Summary

59. The data tables presented in this chapter present concise summaries of the conditions in the Commonwealth as a whole. Not only are tables presented regarding the five Category listing (17 VA subcategory) for each of the three waterbody types, use support tables are shown for each of the six uses in each water body type as well as for the five uses of the Chesapeake Bay. The overall tables for both causes and sources of impairments are quite detailed. Several of the numbers in the cause table may have to be revised or at least explained. It is stated in the Table 3.1-6 Waters Impaired by Various Cause Category that 2148 mi.² are impaired due to aquatic vegetation/macrophytes. What estuarine designated use is impaired to that extent (2148 of 2428 mi.²) by aquatic vegetation? Likewise, several questions rise when Table 3.1-7 Waters Impaired by Various Source Categories is scrutinized. Agriculture is considered a major source of estuarine impairment but Animal Feeding Operations, Crop Production, Grazing in Riparian Zone, Manure Runoff (among other agricultural activities) are not? In addition, Municipal and Industrial Point Source Discharges are stated as ubiquitous sources at 2207 mi.². The discussion should address these issues between causes and major sources of impairments.

Response

SAV acres were assessed as part of the Bay segmentation. The Bay segments failing the SAV use add up to this square mileage. However, as you point out, SAV has a very limited grow zone associated with each Bay segment and in order to properly describe the SAV impairments, GIS must be used. This error has been corrected.

As far as sources are concerned, your point is taken but a generalized approach to sources of impairment has been taken. True sources of impairment are only confirmed through more comprehensive studies such as with TMDL studies or other stressor tools.

Unfortunately, the ADB is set up to incorporate sources with impaired assessment units. As you know, the Bay segments are very large and while municipal and industrial point sources are not ubiquitous, they are considered sources affecting the overall Bay segment(s).

60. The introduction paragraph to this chapter left out any mention of lake acreage in the Commonwealth. It was also stated that the new hydrographic database has resulted in additional refinements which resulted in an increase of overall stream miles. Yet in the next page, it is stated that the use of the National Hydrographic Database (NHD) has decreased the number of stream miles. These two contradictory statements should be clarified.

Response

[The contradiction has been rectified.](#)

Chapter 3.2 Individual River Basin Description and Assessments

61. The presentation of concise information on the nine river basins allowed for a quick overview of conditions in these hydrographic areas. The inclusion of a section for each basin on citizen-generated and non-agency water quality monitoring data shows what type of non-VADEQ monitoring is occurring and the fate of that submitted data. The addition of a sub-table (where appropriate) on Chesapeake Bay Designated Uses based on specific Chesapeake Bay Standards presents additional information on individual basins. The ‘Source Unknown’ is still the number one source of impairment for rivers and lakes in all nine major basins. Are there plans to better articulate the sources of impairment to Commonwealth waters? It may also be a good idea to present tables in the discussion for each river basin with assessment results based on the five category listing format. This would enable the reader to better understand the breakdown of waters and where the strength and weaknesses of the monitoring and assessment programs are in each river basin.

Response

[The TMDL studies, where appropriate, are designed to articulate the sources of impairment.](#)

[DEQ will consider summarizing the basin Categories in future reports.](#)

Part IV Nonpoint Source Assessment, Prioritization and Activities

Chapter 4.1 Nonpoint Source Assessment, Prioritization and Activities

62. This chapter presented a very comprehensive and thorough discussion regarding this pollution problem. It also illustrated the realization that this is a major area where pollution determinations, reductions and preventions still needed to be performed. The systematic evaluation indicated that almost one-half of the Commonwealth’s waters has medium to high non-point source (NPS) pollution potential. The figures mapping out the areas with potential problems indicates that NPS pollution is not ubiquitous but tends to cluster in particular sections of the Commonwealth. Nutrient NPS pollution potential (nitrogen and phosphorus) is more widespread while sediment NPS pollution potential appears to be a non-urban nutrient related phenomenon. Roughly 70 percent of the watersheds with minimum to high non-point source pollution potential also exhibited below average minimized version of the Modified Index of Biological Integrity (miniMIBI). The addition of monitoring data in this assessment emphasized both the urban and agricultural sources as well as the resource extraction component of non-point pollution. It was interesting to note that monitoring data brought to the forefront areas which were thought to have low non-point source pollution potential. Most of the NPS pollution priority areas are noted in Figure 4.1-13 Virginia 2006 Nonpoint Source Pollution Priorities (Rivers) as being rural watersheds.

Response

DEQ agrees.

Part V Ground Water Protection Programs

Chapter 5.1 Ground Water Protection Programs

63. This discussion on the Ground Water Protection Program covers most if not all ground water activities in the Commonwealth of Virginia. Most of the discussion related to programs involved in ground water protection and characterizations. However, only a small amount of information was presented on ground water use as a potable water supply. This discussion indicates that roughly 1.4 million people depend on ground water as their sole source of drinking water and that eight out of ten Virginians are at least partially dependent on ground water for their drinking water supply. It would have been informative if a description of the quality and quantity of the public portion of that water supply was provided in the report. Table 5.1-1, Public Water Supply Systems and Populations Served from Virginia's Source Water Assessment and Protection Reporting, is difficult to interpret as it relates to the 1.4 million people solely and eight out of ten partially dependent on groundwater. It is unclear what is meant by the term 'GW-dependent community water supply system'. The information presented in that table needs to be elaborated upon in regard to ground water issues. With ground water being both a major source of drinking water and base flow for surface waters, more comprehensive information characterizing this important resource is needed. Although Table 5.1-4, Ground Water Contamination Summary is a good synopsis of conditions, it does not provide relevant information on how much of the water supply problems (both public and private) and stream impairments found in the Commonwealth are the result of poor ground water quality.

Response

9 VAC 25-200-10 et seq. of the Virginia Administrative Code ([Water Withdrawal Reporting Regulation](#)) requires every user withdrawing groundwater or surface water in Virginia whose average daily withdrawal during any single month exceeds 10,000 gallons per day to report their use to the DEQ. Reportable withdrawals include, but are not limited to, those for public water supply. Withdrawals for ground water based public water supplies based on calendar year are presented below:

2000 64.3 million gallons per day (MGD)

2001 68.4 MGD

2002 76.1 MGD

2003 68.4 MGD

2004 72.2 MGD

The Virginia Department of Health provided available quality information in Table 5.1-5; the footnote indicates MCL exceedence information was not available due to staff limitations at the Virginia Department of Health. Software modernization efforts at EPA may make this information more readily available for future reporting cycles.

The 1.4 estimate was generated through the 1990 Census question: what is the source of your drinking water? For those surveys that selected "individual well" (drilled or dug) a multiplier was used based on average household size to create an estimate of the number of Virginians on wells. The 2000 Census did not include a question on source of drinking water so this

information has not been updated. Neither quality nor quantity information is available for private domestic wells. So the 1.4 million was never intended to be part of Table 5.1-1.

The eight out of ten number generated years ago includes private domestic users, individuals served by public systems that are ground water based AND individuals served by public systems that mix surface and ground water. It is impossible to reconcile the differences in these figures.

12 VAC 5-590-10 (Part I General Framework for Waterworks Regulations, Article 1. Definitions) of the Virginia Administrative Code states "Community water system" means a waterworks which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. A "GW-dependent" community water supply system means the source is ground water not surface water.

Guidance (dated July 29, 2005 from Diane Regas, Director Office of Wetlands, Oceans, and Watersheds) includes language in Part D. which says "states must have the means to monitor water quality (including "navigable waters and to the extent practicable, ground waters") and annually update water quality data and include it in their section 305(b) submittals". Budgetary constraints during this reporting period prevent coordinated data collection activities designed to characterize ambient ground water quality and changes to that quality over time on a statistically valid statewide basis.

Neither the Table 5.1-4 itself nor the instructions for the table (1997 Guidance) call for a relationship to be established between the contamination incidents summarized and impacts to water supplies. Please do not make the assumption that the contamination summaries in Table 5.1-4 relate to detections noted in Table 5.1-5; this would be completely inappropriate.

Part VI State Background Information and Water Program Descriptions

Chapter 6.1 State Background Information

64. This chapter presents a concise picture of the Commonwealth with Table 6.1-1 Virginia Water Resource Atlas providing all the information requested in the 2006 ILG. There is, however, some discrepancies between this table and the discussion on water resources as it relates to lakes. The discussion stated that there are 248 publicly owned lakes with a combined area of 130,344 acres while the atlas stated that these same 248 lakes cover 163,230 acres. Discounting the five very large public lakes means that the other 105 'significant lakes' for monitoring purposes average 101 acres in size.

Response

[This discrepancy has been corrected.](#)

Chapter 6.3 Cost Benefit Associated with the Construction Assistance Program

65. This Chapter covers in a concise and understandable manner the five major programs which address publicly financed construction activities relating to pollution abatement. Table 6.3-1 Summary of Revolving Loan Fund shows the enormity of the commitment towards restoring waters of the Commonwealth. The insert showing what types of activities were funded with the 248 BMPs and the scope of the issues being addressed. One thing missing from this chapter is a discussion on documented water quality improvement results from all these expenditures, i.e. how many miles of streams were restored or improved exhibited improved water quality as documented by before and after monitor and assessment activities.

Response

DEQ believes that all CAP projects and TMDL related BMP's provide improved water quality. DEQ monitoring strategy is not designed to monitor discharges or specific BMP results as resources are limited. We are currently exploring the possibility of inviting citizen monitoring as well as point source personnel to assist DEQ with documenting improving water quality using an upstream, downstream monitoring strategy. This concept is still in a planning mode and will take a lot of cooperation and coordination to provide useful information.

Chapter 6.5 Public Health/Aquatic Life Concerns

66. The fish consumption advisory issue is covered in much detail in this discussion. Not only are ongoing historic advisories/restrictions presented, newer and/or expanded advisories are also covered in detail. Because of the VADOH switch over to a risk-based 0.5 ppm methyl mercury action level, more waters (especially swamp waters) are being placed under advisories. VADOH also lowered the action level for PCBs resulting in expanded and new advisories. Since the 2004 Integrated Listing Report, many new advisories have been posted on a variety of river basins around the state. In summary, all fish consumption advisories in the Commonwealth are the result of elevated methyl mercury or PCBs levels.

Response

Your observation is correct.

Chapter 6.7 Estuary and Coastal Program Initiatives and Assessments

It is no surprise that a Commonwealth with over 2000 mi.² of estuary and 120 miles of Atlantic Ocean coastline presents a long and detailed discussion on these resources. The presence of the Chesapeake Bay (Bay), the largest in the Nation, has been the center of much monitoring, assessment and restoration activities. The long discussion on the evolving nature of activities relating to the Bay indicates the importance of this estuary to the Commonwealth. The detailed presentation on the new Bay criteria and resulting new aquatic life uses emphasizes the Commonwealth's participation in the development of and commitment towards these newer assessment mechanisms. In addition, the cooperative development with the State of Maryland of an uniform benthic invertebrate assessment methodology indicates the Commonwealth's willingness to embrace cutting edge methodologies for monitoring and assessing this valuable national ecological treasure. The color maps in Figures 6.7-3 thru 8 allows the reader a very clear picture of conditions in the Bay as they relate to the newer Bay criteria and the benthic biological assessments. The complexity of these estuarine issues has been made more understandable by a reading of this chapter.

67. Although issues relating to the Bay were well covered in this chapter, the omission of information relating directly to Atlantic Ocean coastline and bays monitoring and assessment information especially regarding recreational contact use as funded by the Beaches Environmental Assessment and Coastal Health (Beach) Act are areas that need to be addressed. No where in this chapter or in the assessment related sections of this report was summary information presented on the results of the Beach Act monitoring and assessment activities. The monitoring and assessment activities relating to the Atlantic Ocean coastline and direct drainage bays and streams should also be discussed in addition to and separately from the Chesapeake Bay-Small Coastal Basin in Part III of this report since the Bay drainage overshadows any monitoring and assessment activities in the ocean drainage. Specific information on the

conditions of the 360 mi.² of coastal Commonwealth waters should be incorporated either in this chapter or in Part III of the final version of this report .

Response

DEQ does not implement the BEACH Act as that program is part of the Virginia Health Department (VDH) activities. Both the Atlantic Coastline as well as other estuarine waters within the Bay and its tidal tributaries are assessed under this program. DEQ does consider the VDH bacteria data collected under this program, as per the assessment guidance manual, and has assessed the overall water quality relative to recreation use. While these results are not specifically identified, they are incorporated into the overall estuarine assessment for recreation use.

Chapter 6.8 Wetlands Assessment and Program Initiatives

This chapter presents a concise picture of wetlands in Virginia. Details concerning the status of wetlands have been updated from the last report with the most up to date information covering the period ending in 2001. This discussion acknowledges the recent loss of wetland acreage in the Norfolk/Hampton area as apparently high considering the size of the area. Flyovers of this area in the 1900s show urban sprawl and expansion of agriculture throughout the southeast coastal area of Virginia altering the nature of the landscape at an accelerated pace. That this loss has slowed since 2000 is a good indication that protective measures are working. We look forward to the timely completion of the GIS based revised estimates of wetland acreage with the inclusion of those results in the 2008 Integrated Listing report.

68. We are pleased that the Commonwealth is moving ahead in plans to monitor and assess its wetland resources. The EPA grants in 2003 and 2004 should help in this effort. The monitoring and assessment of jurisdictional waters in the Commonwealth needs to also include a comprehensive look at wetlands. It is a welcomed situation that Virginia is initiating activities to develop a ten-year plan for wetland monitoring and assessment which follows the EPA March 2003 “Elements of a Wetland Monitoring and Assessment Program.” It should be noted that on May 5, 2006 EPA released the Application of Elements of a State Water Monitoring and Assessment Program for Wetlands which is a supplement to the March 2003 Monitoring Elements document and specific to wetlands. This chapter should be updated to reflect the release of this new “Elements” document.

Response

Updated accordingly.

69. EPA R3 Draft 303d list of specific questions

SWRO		EPA Questions	DEQ Responses
VAS-P11R-07	Sepulcher Creek	Delisted 3.5-49, Could not Find on 2004 List	A TMDL for bacteria was completed in 2004, Fed ID 21469. A DEQ AWQM station at 6BSEP000.55 was fully supporting with 8% (1/12) E.coli violations for the 2006 WQA.
VAS-P10R-01	Lick Creek	Does this Segment Include Right Fork	No, Right Fork is not included in this VAS-P10-01 Segment. Right Fork was identified as VAS-P10R-04 in 2002 its AU is LCR01A98.
VAS-P20R-00		Is this Segment Identification for Puckett Creek	Yes.
VAS-P20R-04		Is this Segment Identification for Baileys Trace	Yes, and its tribs.
VAS-P20R-05		Is this Segment Identification for Ely Creek	Yes, and its tribs.
VAS-P20R-06		Is this Segment Identification for Gin Creek	Yes, and its tribs.
VAS-P20R-07		Is this Segment Identification for Lick Branch	Yes, and its tribs.
VAS-Q13R-04	Pound River, South Fork	List ID was used for Donald Branch or Phillips Cr in 2004.	Correct. South Fork Pound River is Q13R-01 in 2004.
VAS-N36R-01	Bluestone River	Listed on 2004 List for PCBs and Bacteria.	Has approved TMDL for bacteria, Fed ID 18192, and benthics, Fed ID 18193. PCB TMDL is not done.
VAS-N08R-00	Cripple Creek	Listed on 2004 List for Bacteria.	There is no VAS-N08R-00. The Cripple Creek, VAS-N09R-00, bacteria flag is now VAS-N09-01.
VAS-P11L-01	Wise Lake	Listed on 2004 List for DO.	Correct due to natural causes-no new data for 2006.
VAS-P13R-01	Stock Creek	Listed on 2004 List for Benthic.	This use no longer impaired based on benthic sampling results collected in 2003. The waters now Fully Support the Aquatic Life Use. A TMDL for the General Standard - Benthic was completed and US EPA approved in May 2006.
VAS-P20R-05	Ely Creek and Tribs	Listed on 2004 List for Benthic. EPA response-TMDL does not provide allocations for these tribs	Correct. This is a trib to Straight Ck which has an approved TMDL. Listed as Cat 5A
VAS-P20R-06	Gin Creek	Listed on 2004 List for Benthic. EPA response-TMDL does not provide allocations for these tribs	Correct. This is a trib to Straight Ck which has an approved TMDL. Listed as Cat 5A
VAS-P20R-07	Lick Branch	Listed on 2004 List for Benthic. EPA response-TMDL does not provide allocations for these tribs	Correct. This is a trib to Straight Ck which has an approved TMDL. Listed as Cat 5A
VAS-Q13L-01	John Flannagan Reservoir	Listed on 2004 List for DO.	DO due to natural conditions in 2004; added pH due to natural conditions in 2006.

VAS-P11R-03	Guest River	Listed on 2004 List for Hg and As	DEQ sediment and fish tissue monitoring at 6BGUE006.50 found two fish samples that exceeded the screening value for PCBs. At 6BGUE006.45, total As, as opposed to inorganic As, was >SV detected in 2 fish samples in 2001, therefore, observed effects. Hg was in a single stoneroller sample in 1997, therefore, observed effects.
VAS-O09R-01	Lick Creek	Listed on 2004 List for Bacteria.	This is correct; the segment is additionally listed for benthic impairment.
VAS-P19R-02	Poor Valley Creek	Could not Find on 2004 List.	US Forest Service Bio. Station was mis-categorized as 5A in 2004; corrected to 4C in 2006 because impairment was due to drought conditions.
VAS-P06R-02	Big Cedar Creek	Could not Find on 2004 List.	Correct. This is VAS-P06R_BCD03A00 and VAS-P06R_BCD02A02, 2006 additions for bacteria.
VAS-P11R-06	Guest River	Could not Find on 2004 List.	Correct. This is VAS-P11R_GUE03A98, 2006 addition for PCB in fish tissue.
VAS-P11R-12	Guest River	Could not Find on 2004 List.	Correct. This is VAS-P11R_GUE01A00, 2006 addition for bacteria and PCB in fish tissue.
VRO			
VAV-B18R-05	Briery Branch	Listed on 2004 List for Bacteria.	Still listed for FC (5A) in 2006 in VRO ADB
VAV-B18R-02	Briery Branch	Listed on 2004 List for pH.	Still listed for pH (5C) in 2006 in VRO ADB
VAV-B21R-01	Dry River	Listed on 2004 List for Benthic.	Benthic Impairment Delisted-According to a letter received from EPA on March 3, 2003, EPA allowed this segment to be delisted from the impaired list. This delisting was not reflected in the 2004 assessment.
VAV-B23R-01	North River	Listed on 2004 List for Benthic.	Still Impaired for Benthics in VRO ADB with the following AU comment: The aquatic life impairment based on the slightly impaired benthic status is now part of a preliminary EPA approved stressor report to move from 5A to 4A - Impaired - EPA approved TMDL. Wildlife use is fully supporting. Fish consumption is fully supporting with observed effects due to exceedences of proposed Mercury Criteria in 1999. Once the preliminary benthic stressor report is approved, the benthic impairment will be moved from 5A to 4C.

VAV-B29L-01	Lake Shenandoah	Listed on 2004 List for DO.	This lake was incorrectly assessed as impaired during the 2004 cycle. Incorrect Trophic Status Indices maximum numbers were utilized to determine impairment status (50 rather than 60). With the correct maximum index scores utilized, the dissolved oxygen impairment in the Hypolimnion is considered to be natural and not anthropogenic in nature. The secchi depth TSI, while above 60 is greater than 10% higher than the total phosphorus or chlorophyll A scores and thus according to the 2006 Virginia Water Quality Assessment Guidance does not impair this lake from anthropogenic sources, but indicates a high concentration of inorganic matter. This lake's support status for aquatic life is moved from 5A - Impaired - Needs a TMDL to 4C - Impaired - No TMDL due to natural conditions.
VAV-H23L-01	Lake Albermarle	Listed on 2004 List for DO.	This lake was incorrectly assessed as impaired for DO during the 2004 cycle. Incorrect Trophic Status Indices maximum numbers were utilized to determine impairment status (50 rather than 60). With the correct maximum index scores utilized, the dissolved oxygen impairment in the Hypolimnion is considered to be natural and not anthropogenic in nature. This lake's support status for DO is moved from 5A - Impaired - Needs a TMDL to 4C - Impaired - No TMDL due to natural conditions. However, the lake remains impaired for aquatic life as a 5A due to pH violations in both the Epilimnion and Hypolimnion.
VAV-B47R-06	Dry Fork	Listed on 2004 List for Benthic.	VAV-B47R-06 is the User Flag for the bacteria impairment which has an approved TMDL. The benthic impairment, according to VRO ADB, is a new listing for the 2006 cycle. Aquatic life was listed as fully supporting in 2004 in the VRO ADB. The User Flag for the benthic impairment in 2006 is VAV-B47R-07

VAV-B50R-01	Toms Brook	Listed on 2004 List for Benthic.	This AU is still impaired for benthics, but is 4A as it is part of the Approved TMDL for benthics-Federal TMDL ID # 21697
VAV-B54R-01	Passage Creek	Listed on 2004 List for Bacteria.	Still listed for FC and EC (5A) in 2006 in VRO ADB from Peters Mill Run downstream to North Fork Shenandoah River. The upstream segment was 2A in 2004 and 2006 which is from the headwaters downstream to Peters Mill Run.
VAV-I35R-01	Mill Creek	Listed on 2004 List for Temperature.	Still listed as not supporting aquatic life due to temperature violations, however moved from 5A to 4C AU Comment in ADB: The aquatic life use is impaired due to violations of the temperature WQS. By letter from the Virginia Department of Game and Inland Fisheries, this water is not considered a cold water fishery. The temperature impairment will move from Category 5A - Impaired and needing a TMDL to Category 4C - Impaired, not needing a TMDL due to natural conditions.

SCRO

VAC-H36R-01	Willis River	Identified for delisting for FC on page 3.5-23 but was not on 2004 List for FC	Listed as 4A in 2004 (2004 Report: Page 3.3 - 40)
VAC-L19R-01	Staunton River	Delisted 3.5-32 but listed on page 3.3a-100	Listed for PCBs in 2006 under this TMDL ID
VAC-H02L-01	Pedlar Lake	Listed on 2004 List for DO.	DO impairment considered 4C - natural not needing TMDL, pH is considered 5C
VAC-J03R-02	Marrowbone Creek	Listed on 2004 List for DO.	Listed on page 3.3a - 133 of 2006 report
VAC-H12R-03	Buffalo Creek	Listed on 2004 List for Benthic.	Delisting approved April 2006
VAC-K14R-01	Nottoway River	Listed on 2004 List for Bacteria.	Listed as Category 4A for 2006 - TMDL Complete

WCRO

VAW-I05R-01N-	Cedar Creek	Listed on 2004 List for Temperature.	DGIF correction to WQS (4C). Split segment to match DGIF correction. Did not appear in 2006 303(d) List because categorized 4C. TMDL Group ID 90003 .
VAW-I26R-01	Ellis Run	List ID was used for Looney Creek in 2004.	Same Watershed (I26) as Looney. Bacteria TMDL EPA approved 6/21/2004 . TMDL Group ID 01703 .
VAW-L03R-01	Roanoke River	Listed on 2004 List for Temperature.	DGIF correction to WQS (4C). TMDL Group ID 90005 .
VAW-L03R-02	Roanoke River	Listed on 2004 List for Temperature.	DGIF correction to WQS (4C). TMDL Group

			ID 90004 .
VAW-L04R-03	Roanoke River	Listed on 2004 List for PCBs.	Remains Category 5A for Fish Tissue PCBs. TMDL Group ID 30000 .
VAW-L05R-01	Tinker Creek	Listed on 2004 List for Temperature.	DGIF correction to WQS (4C). TMDL Group ID 90007 .
VAW-L05R-03	Glade Creek	Listed on 2004 List for Temperature.	DGIF correction to WQS (4C). TMDL Group ID 90006 .
VAW-L08R-004 VAW-L08R-01	Green Creek	Listed on 2004 List for Bacteria.	South Fork Blackwater River & Tribs. Bacteria TMDL EPA approved 2/21/2001 . Green Creek (S.F. BWR headwaters) Category 4A. TMDL Group ID 00102 .
VAW-L12L-03	Smith Mountain Lake	Listed on 2004 List for DO.	Remains Category 4C for DO. TMDL Group ID 01804 .
VAW-L12L-04	Smith Mountain Lake	Listed on 2004 List for Bacteria and PCBs.	Roanoke River - remains Category 5A for Bacteria TMDL Group ID 00292 (TMDL submitted for approval) / Also remains Category 5A for PCBs in Tissue. TMDL Group ID 30000 .
VAW-L12L-05N	Smith Mountain Lake	Listed on 2004 List for Bacteria, PCBs and DO.	Blackwater River - Category 4A for Bacteria EPA approved 4/27/2001 TMDL Group ID 00130 . / Remains Category 5A for PCBs in Tissue. TMDL Group ID 30000 . / Remains Category 4C for DO. TMDL ID 00719 .
VAW-L12L-06N	Beaverdam Creek	Listed on 2004 List for DO.	Incorrectly categorized 5C for DO in 2004 (see 2004 Guidance). Changed to Category 4C 2006 for DO. TMDL ID 00717 .
VAW-L13L-01N	Leesville Lake	Listed on 2004 List for pH.	Remains 303(d) Listed Category 5C for pH. TMDL Group ID 50500 .
VAW-L13L-02	Leesville Lake	Listed on 2004 List for DO.	Remains Category 4C for DO. TMDL ID 00725 .
VAW-N16L-01N	Claytor Lake	Listed on 2004 List for DO.	Remains Category 4C for DO. TMDL ID 01718 .
NVRO			
VAN-A19R-01	Broad Run	Listed on 2004 List for Bacteria.	The bacteria impairment is still listed for the 2006 assessment and can be found with the information for assessment unit VAN-A19R_BRU02A00.
VAN-A19R-02	Broad Run	Listed on 2004 List for Bacteria.	The bacteria impairment is still listed for the 2006 assessment and can be found with the information for assessment unit VAN-A19R_BRU07A02.

VAN-A19R-05	Broad Run	Listed on 2004 List for Bacteria.	The bacteria impairment is still listed for the 2006 assessment and can be found with the information for assessment unit VAN-A19R_BRU08A04
VAN-A23R-01	Bull Run	Listed on 2004 List for Bacteria, Benthic PCBs.	The portion of Bull Run, stretching from the confluence with Cub Run downstream until the confluence with Popes Head Creek, identified as assessment unit VAN-A23R_BUL02A02, was included in Attachment A, Category 1, Part 1 of Virginia's 1998 Part 1A submittal for benthics. Additionally, this segment was included in Attachment B of the 1999 Consent Decree (Plaintiff's list of waters) for fecal coliform. It was found to be fully supporting of the recreation use in the 2002 305(b) water quality assessment. However, with the lower fecal coliform bacteria criteria, it is assessed as not supporting the recreation use for the 2004 water quality assessment. This assessment unit, VAN-A23R_BUL02A02, is listed for all three impairments for the 2006 integrated assessment. The VDH fish consumption advisory, which is the immediate cause of the PCB in fish tissue impairment, also extends to adjacent assessment units, as the advisory extends along Bull Run from the crossing of I-66 downstream until the crossing of Yates
VAN-A30R-01	Williams Creek	Listed on 2004 List for DO and pH.	After discussion with monitoring staff, I was informed that monitoring station 1AWLL002.21, located at the Route 301 crossing, was located in the tidal portion of Williams Creek. Therefore, the station was included in the estuarine assessment unit VAN-A30E_WLL02A02, rather than the free flowing assessment unit as it had been for the 2004 assessment. Both the dissolved oxygen and pH impairments were transferred to assessment unit VAN-A30E_WLL02A02.
VAN-A30R-02	Upper Machodoc Creek	Listed on 2004 List for Bacteria and pH.	The bacteria and pH impairments are still listed for the 2006 assessment and can be found with the information for assessment

			unit VAN-A30R_UMC01A00.
VAN-E20E-01	Rappahannock River TF	Listed on 2004 List for pH.	Assessment units VAN-E20E_RPP01A02, VAN-E20E_RPP02A02, VAN-E20E_RPP03A02, VAN-E21E_RPP03A02, VAN-E21E_RPP04A02, and VAN-E21E_RPP05A02 compose the Northern Virginia Regional Office's portion of the RPPTF. However, none of these assessment units were identified with an impairment for the pH parameter in either the 2004 or 2006 assessment reports.
PRO			
VAP-A31R-01	Pine Hill Creek	Listed on 2004 List for Bacteria and DO.	No. Was listed for DO and pH, not bacteria. In 2006, Natural Conditions Assessment recommended Class VII, so considered 4C.
VAP-A32E-07	Nomini Creek	Listed on 2004 List for DO.	Still is. Included under VAP-A32E-02 (Potomac Mesohaline Embayments 10051 page 3.3a-12)
VAP-A33E-08	Kinsale Branch	Listed on 2004 List for Shellfish.	Still is. Condemnations expanded and merged. Now included under VAP-A33E-07 (Hampton Hall Branch 00922 page 3.3a-6)
VAP-A33E-11	Dungan Cove	Listed on 2004 List for Shellfish.	Still is. 00920 Dungan Cove page 3.3a-5
VAP-C01E-01	Great Wicomico River	Listed on 2004 List for DO.	It still is; it is included under VAP-A34E-27 (Chesapeake Bay 5 Mesohaline Embayments (page 3.3a-80)
VAP-C01E-16	Fleets Bay	Listed on 2004 List for Shellfish.	Fleets Bay was not listed for Shellfish in 2004. It was listed in 2002 for DO due to natural stratification. (Still listed for DO under VAP-A34-27)
VAP-C01E-23	Indian Creek	Listed on 2004 List for DO.	Still is. Included under VAP-A34E-27 (Chesapeake Bay 5 Mesohaline Embayments (page 3.3a-80)
VAP-C02E-01	Dragon Run	Listed on 2004 List for DO.	Still is, under Piankatank River Mesohaline Embayments TMDL ID 01771; pg 3.3a-90. It was listed in 2002 and categorized as 5C - natural conditions of swampy waters; in 2006 there was insufficient data to assess therefore it remains listed under. .
VAP-C03E-02	Dragon Swamp	List ID was used for Harpers Creek on 2004	VAP-C03E-02 now includes the upper portion of Piankatank River, the tributary Harpers Creek and tidal Dragon Swamp (TMDL ID 00980). VDH expanded the

			Shellfish condem.areas in Sept 2004 which includes these areas. 3.3a-82.
VAP-C03E-02	Piankatank River	List ID was Known as Harpers Creek in 2004.	VAP-C03E-02 now includes the upper portion of Piankatank River, the tributary Harpers Creek and tidal Dragon Swamp (TMDL ID 00980). VDH expanded the Shellfish condem.areas in Sept 2004 which includes these areas. 3.3a-82.
VAP-C03E-08	Jackson Creek	List ID was VAP-C08E-09 on 2004	VAP-C03E-08 is the correct ID for Jackson Creek; shellfish area expanded in Dec 2004 to include the entire Jackson Creek;(TMDL ID 00989) pg 3.3a-85
VAP-C03E-09	Jackson Creek	Listed on 2004 List for Shellfish.	Shellfish area in Jackson Creek expanded - all under VAP-C03-08. It remains listed under TMDL ID 00989 pg 3.3a-85.
VAP-C04E-05	Morris Creek	List ID was used for Stutts Creek in 2004.	In 2004, condemnations for Stutts and Morris were merged. In 2006, condemnations split again, but both still included under VAP-C04E-05. (Morris is 01011 page 3.3a-88 ; Stutts is 01016 page 3.3a-92)
VAP-C04E-05	Morris Creek	Listed on 2004 List for DO and was segment 06.	Is still listed for DO and is still listed under VAP-C04E-06. This ID is for the shellfish impairment.
VAP-C04E-06		Is this Segment Identification for Morris Creek	Yes. The DO impairment is still included under this ID.
VAP-C04E-14		List ID was used for Put-In-Creek in 2004.	Still is. (Shellfish impairment 01014 page 3.3a-91) (DO impairment is under VAP-C04E-23 01770 page 3.3a-88)
VAP-C04E-22	Pepper Creek	Could not Find on 2004 List.	Changed. The segment was delisted in 2004, but was re-listed this cycle. Due date of 2018 is correct, but initial listing date should be 2006.
VAP-C09E-02	Pocomoke River	Could not Find on 2004 List.	C09 is in TRO. (See TRO below)
VAP-E23E-03		Is this Segment Identification for Hoskins Creek	Yes.
VAP-E23E-04		Is this Segment Identification for Piscataway Creek	Yes.
VAP-E24E-02		Is this Segment Identification for Touskey Creek	Yes, but it is spelled Totuskey Creek
VAP-E24E-05		Is this Segment Identification for Farnham Creek	Yes.
VAP-E25E-18	Mud Creek	Listed on 2004 List for Shellfish.	No. Was listed in 2004 for DO only (based on station 3-MUC002.31 which was incorrectly classified as tidal - however tidal Mud Creek still impaired for DO as part of VAP-E22E-01 01776 Rappahannock River

			Mesohaline Embayments page 3.3a-45.) Tidal Mud Creek did become listed for SF in 2006 (VAP-E25E-06 10078 page 3.3a-73)
VAP-F04R-01	South Anna River	Delisted 3.5-53 for FC but listed on 3.3a-179	Only a portion was delisted "During the 2006 cycle, E. coli monitoring was conducted at the Route 33 bridge (8-SAR021.22), as well as at new stations 8-SAR014.47 and 8-SAR012.42. Violation rates were acceptable at the upstream stations (1/12 at 8-SAR021.22 and 0/9 at 8-SAR014.47), however there were 3 violations out of 12 samples at 8-SAR012.42. Because of the fully supporting status of the upstream portion, the impaired segment has been shortened from the UT above Horseshoe Bridge Road downstream to the Ashland Municipal STP. The TMDL is due in 2014, but is currently in progress."
VAP-F23R-01	Mattaponi River	Delisting Package for pH Submitted but Could not Find on 2004 List.	VAP-F23R-01 recommended for delisting for benzo(k)fluoranthene (page 3.5-52), not pH; (VAP-F23E-01 (tidal Mattaponi) was assessed as 4A for pH.)
VAP-G01L-01	Falling Creek Reservoir	Listed on 2004 List for Nutrients.	Recommended for delisting b/c use was removed - "DELIST - Public Water Supply - VAP-G01L-01 The lake was subject to historical chronic problems resulting from nutrients and organic loadings. It was listed in 1998 as not supporting the Public Water Supply use and threatened of the ALUS. The Public Water Supply Use has been removed from the WQS. Since the PWS Use for Falling Creek has been removed from the WQS and the TSIs meet acceptable limits the lake should be delisted." FYI - later correction was made which added it to the list in 2006 for ALUS due to natural stratification
VAP-G03E-02	James River	Could not Find on 2004 List.	Was impaired for several ALUS impairments. See 2004 report Appendix A, Volume 2, page A-455.
VAP-G05R-02	Upham Brook Watershed	Listed on 2004 List for Bacteria.	Still is. See 00340 Upham Brook Watershed page 3.3a-37 (Reverted to E. coli in 2006)

VAP-H38R-05	UT to UT James River	Listed on 2004 List for Bacteria.	Still is. See 01179 James River, Unnamed Tributary page 3.3a-28
VAP-H39R-02	Deep Run	Delisted for DO 3.5-23 but not listed on 2004 List	Was listed in 2004 as portion of Tuckahoe Creek Watershed VAP-H39R-02
VAP-H39R-02	Tuckahoe Creek	Delisted for DO 3.5-25 but listed on 2006 list page 3.3a-65	Headwaters portion of Tuckahoe Creek is recommended for delisting; lower portion classified as 4A.
VAP-H39R-02	Tuckahoe Creek	Delisted for pH 3.5-25 but listed on 2006 list page 3.3a-66	Only an UT is listed for pH (VAP-H39R-03 10043 page 3.3a-37); Tuckahoe Creek itself is recommended for delisting
VAP-H39R-06	Reedy Creek	Listed on 2004 List for Bacteria.	Still is. See 01191 Reedy Creek page 3.3a-34. (Reverted to E. coli in 2006)
VAP-H39R-12	James River	Delisted for FC 3.5-24 but not on 2004 list and included on 2006 list 3.3a-49	Delisted for pH only; remains listed for bacteria - see page 3.5-24 VAP-H39R_JMS02B04
VAP-H39R-12	James River	Listed on 2004 List for Bacteria and pH.	Delisted for pH in 2006 (page 3.5-24 VAP-H39R_JMS02B04); remains listed for bacteria (page 3.3a-27 James River 01174)
VAP-H39R-12	James River	Could not Find on 2004 List.	Uncertain why fact sheet was not included in 2004 report; regional records shows impairment and 303(d) listing in 2004 - in the 2006 cycle, it was delisted for pH and remains listed for FC
VAP-J07R-02	Rock Ford Creek	Listed on 2004 List for Bacteria.	It still is; it is included under VAP-J07-02; TMDL ID 001198 pg 3.3a-34 in 2006 IR.
VAP-J07R-02	Rocky Ford Creek	Could not Find on 2004 List.	see page 3.3a-24 of 2004 IR
VAP-J08R-01	Flat Creek	Listed on 2004 List for Bacteria.	Flat Creek was included in the Bacteria TMDL Appomattox River development report and EPA approved on 8/30/2004, and categorized as 4A; the EPA TMDL ID was not available at for 2006 assessment.
VAPJ11R-02	Deep Creek	Listed on 2004 List for DO.	In 2006, Natural Conditions Assessment recommended Class VII, so considered 4C.
VAP-J15E-01	Appomattox Creek	Listed on 2004 List for PCBs.	It is still listed for PCBs; see pg 3.3a-18 TMDL ID 01761. see VAP-G01-03.
VAP-K06R-01	Great Creek	Listed on 2004 List for Bacteria.	Still is. During the year 2006 cycle, the bacteria impairments (VAP-K06R-01, -02, and -03) in Great Creek were combined and expanded. Now VAP-K06R-02, Great Creek 01311, page 3.3a-61

VAP-K06R-03	Great Creek	Listed on 2004 List for Bacteria.	Still is. During the year 2006 cycle, the bacteria impairments (VAP-K06R-01, -02, and -03) in Great Creek were combined and expanded. Now VAP-K06R-02, Great Creek 01311, page 3.3a-61
VAP-K12R-01	Fontaine Creek	Listed on 2004 List for Bacteria.	Still is. See Fontaine Creek, 01322, page 3.3a-60
VAP-K12R-02	Caney Swamp	Delisted 3.5-47, Could Not Find on 2004 List	Do you mean VAP-K11R-02? Caney Swamp was listed as part of "Fontaine Creek & tribs". Now Class VII, so delisted for pH, 4C for DO.
VAP-K21R-01	Stony Creek	Listed on 2004 List for pH, is it still impaired?	No, it was delisted. "The segment was assessed fully supporting of the Recreation and Aquatic Life Uses based on a fecal coliform violation rate of 2/30, an E. coli violation rate of 0/9, and a pH violation rate of 3/30 at the Route 301 South bridge (5ASTO001.20)." See VAP-K21R_STO02B00 Stony Creek page 3.5-37
VAP-K23R-01	Rowanty Creek	Delisted 3.5-39 DO and pH but listed 3.3a-112	Only a portion was delisted. "During the 2006 cycle, the lower portion of the Rowanty Creek watershed below Gravelly Run was reclassified as Class VII swamp waters. That segment is now in conformance with the pH and DO standards and will be delisted. However, the upper Class III portion still has pH and DO violations at 5AATH003.28 (3/4, 3/4) and 5AHRA010.94 (4/12, 4/13) and will remain impaired." Note: spelled Rowanty
VAP-K23R-02	Nebletts Mill Run	Delisted 3.5-38 for FC but listed 3.3a-110	Do you mean VAP-K23R-03? Mainstem was delisted. Trib remained listed. "In addition, Nebletts Run from the Millpond downstream to the mouth and Tributary XDV had been considered not supporting of the Recreation Use. During the 2006 cycle, the fecal coliform violation rate at 5ANBT001.26 was acceptable (2/19), therefore Nebletts Mill Run should be delisted. Tributary XDV continues to be impaired with a fecal coliform instantaneous violation rate of 10/17 and an E. coli violation rate of 2/2. The bacteria TMDL is due in 2016."

VAP-K23R-02	Rowtany Creek	Listed on 2004 List for Bacteria.	Rowanty Creek is still listed. The report incorrectly lists "Nebletts Mill Run and all its tributaries" page 3.3a-62, instead of Rowanty Creek.
VAP-K23R-03		This Stream Id was Listed for DO in 2004 is it Still Impaired?	Nebletts Mill watershed was moved to 4C - "During the 2006 cycle, the watershed was reclassified a Class VII swamp water. The watershed is now in conformance with pH standards for swamp water and will be delisted for pH. However, a DO criteria specific for swamp water has not been developed yet, and the watershed will remain impaired of the DO criteria, but will be assessed as a category 4c water."
VAP-K25R-01		This Stream Id was Listed for DO in 2004 is it Still Impaired?	Raccoon Creek and Spring Creek were reclassified as Class VII, delisted for pH and 4C for DO.
VAP-K26R-01	Otterdam Swamp and Three Cr	Listed on 2004 List for pH.	During the 2006 cycle, Three Creek and its tributaries were reclassified as Class VII swamp waters and the applicable pH criteria was adjusted to 4.3-9.0 SU. The segment is now in conformance with the new pH criteria based on station 5ATRE022.05 and should be delisted for pH.
VAP-K29R-01	Assamoosick Swamp	Delisted 3.5-42 for pH but listed 3.3a-103, Status of Ammonia Impairment.	During the year 2006 cycle, the watershed was reclassified as Class VII swamp waters. All creeks within the watershed except for German Swamp now meet the pH criteria and should be delisted for pH. German Swamp has pH values below the allowable 4.3 SU. Although the exceedences are believed to be caused by natural conditions, the segment remains classified as Cat. 5C; Mainstem never listed for Ammonia
VAP-K29R-01	Assamoosick Swamp	Listed on 2004 List for Ammonia.	No. A UT to Seacorrie Swamp called XDX was listed. Still is. See Seacorrie Swamp, Unnamed Tributary 00527 page 3.3a-64
VAP-K29R-01	Black Swamp	Could not Find on 2004 List.	Included under the VAP-K29R-01 "Assamoosick, Seacorrie, German, Pigeon Swamp" impairment - see 2004 report Appendix A, Volume 2, A-290

VAP-K32R-05	Coppahunk Swamp	Could not Find on 2004 List for DO.	See 2004 report, Appendix A, Volume 2, Page A-698; was listed as 5C, in 2006 was reclassified as Class VII and is delisted for pH and Cat. 4C for DO
VAP-K32R-06	Cypress Swamp	Listed on 2004 List for DO.	Was reclassified as Class VII waters, assessed as Cat. 4C for DO
VAP-K32R-06	Cypress Swamp	Was Previously Listed for DO as Well	Was reclassified as Class VII waters, assessed as Cat. 4C for DO
VAP-K32R-07		Is this Stream Segment Still Listed for DO?	During the 2006 cycle, the entire nontidal Blackwater River watershed was reclassified as Class VII swamp waters and additional watershed monitoring was performed on the Cypress Swamp tributaries. The segment now incorporates all tributaries to Cypress Swamp, which includes Johnchecohunk Swamp. The watershed has acceptable pH values at all stations and should be delisted for pH.
TRO			
VAT-C07E-02	New Market Creek (Lower)	Listed on 2004 List for Shellfish.	Merged into VAT-C07E-22 [contained in 2006 IR as ADB-AU: VAT-C07E_NEW01A02]
VAT-C07E-03	Newmarket Creek	Listed on 2004 List for DO.	Merged into VAT-C07E-22 [Contained in 2006 IR as ADB-AU: VAT-C07E_NEW01A02]
VAT-C07E-06	Lambs Creek	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-C07E_LMC01A04 [VAT-C07E-06 for shellfish]
VAT-C07E-13	Back Creek: Long and Crunland	Listed on 2004 List for Shellfish.	Shellfish 2004 listing submitted for delisting in 2006 IR as ADB-AU: VAT-C07E_LON01A06 [VAT-C07E-13]; DSS classified as Administrative Condemnation for 2006 IR
VAT-C07E-14	Harris River	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-C07E_HAR01A06 [VAT-C07E-14 for shellfish]
VAT-C07L-01	Harwoods Mill Reservoir	Listed on 2004 List for DO.	Contained in 2006 IR as ADB-AU: VAT-C07L_POQ01A04 [VAT-C07L-01 for Oxygen, dissolved]

VAT-C08E-07	London Bridge Creek and Canal#2	Listed on 2004 List for DO and Bacteria.	Contained in 2006 IR as ADB-AU: VAT-C08E_LOB01A00 [Oxygen, dissolved = LYNPH-DO, bacteria = VAT-C08E-05] & Canal # 2 contained in 2006 IR as ADB-AU: VAT-C08E_XBO01A00 [Oxygen, dissolved = LYNPH-DO bacteria = VAT-C08E-05]
VAT-C08E-07	West Neck Creek	Listed on 2004 List for DO and Bacteria.	Contained in 2006 IR as ADB-AU: VAT-C08E_WNC01A00 [LYNPH-DO for DO, VAT-C08E-07 for bacteria]
VAT-C08E-09	Little Creek Channel	Listed on 2004 List for PCBs.	Contained in 2006 IR as ADB-AU: VAT-C08E_LCC01A06 & VAT-C08E_LCC02A06 [VAT-C08E-09 merged into VDH-Bay PCBs]
VAT-C08E-11	Linkhorn Bay	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-C08E_LKN01A00 [VAT-C08E-11 for shellfish]
VAT-C08E-12	Long Creek/Broad Bay	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-C08E_LON01A00 [VAT-C08E-12 for shellfish]
VAT-C08E-13	Lynnhaven Bay	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-C08E_LYN01A06 [VAT-C08E-13 for shellfish]
VAP-C09E-02	Pocomoke River	Could not Find on 2004 List.	Added in 2006 IR as ADB-AU: VAT-C09E_POC01A06 [added for 2006 IR as VAT-C09E-02 for enterococcus, initial list date 2006]
VAT-C09E-10	Holden Creek	List ID was Known as Pocomoke Sound and River in 2004	Contained in 2006 IR as ADB-AU: VAT-C10E_HLD01A06 & HLD02A06 [VAT-C09E-10 for shellfishing]
VAT-C09R-01	Pitts Creek, UT	Listed on 2004 List for DO.	Corrected in 2006 IR FINAL as ADB-AU: VAT-C09R_XAE01A00 [change VAT-C09R-02 to VAT-C09R-01 for Oxygen, dissolved]
VAT-C09R-02	Pitts Creek, UT	Could not Find on 2004 List.	Corrected in 2006 IR FINAL as ADB-AU: VAT-C09R_XAE01A00 [remove VAT-C09R-02, change to VAT-C09R-01 for Oxygen, dissolved]
VAT-C10E-05	Messongo Creek	Listed on 2004 List for DO.	Contained in 2006 IR as ADB-AU: VAT-C10E_MES01A06 [VAT-C10E-05 for Oxygen, dissolved]
VAT-C11E-07	Onancock Creek	Listed on 2004 List for Bacteria.	Contained in 2006 IR as ADB-AU: VAT-C11E_OCN01A04 [VAT-C11E-07 for bacteria]
VAT-C11E-14	Leatherberry Creek	List ID was known as Onancock Creek in 2004	Contained in 2006 IR as ADB-AU: VAT-

			C11E_LTH01A00 [VAT-C11E-14 for shellfish]
VAT-C12E-12	Underhill Creek	Could not Find on 2004 List.	Added in 2006 IR as ADB-AU: VAT-C12E_UNR01A06 [added for 2006 IR as VAT-C12E-12 for shellfish, initial list date corrected to 2006]
VAT-C13E-17	Kusian Cove	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-C13E_NAN01A00 [merged into VAT-C13E-19 for shellfish]
VAT-C13E-20	Holly Grove Cove	List ID was VAT-C13E-13 on 2004	Corrected in 2006 IR FINAL as ADB-AU: VAT-C13E_HGC01A06 [corrected to VAT-C13E-13 for shellfish]
VAT-C14E-01	Hungar Creek, Upper	Listed on 2004 List for DO.	Contained in 2006 IR as ADB-AU: VAT-C14E_HUG01A00 [CB7PH-DO for Oxygen, dissolved]
VAT-D03R-05	Folly Creek-UT	List ID was VAT-D03R-04 in 2004	Corrected in 2006 IR FINAL as ADB-AU: VAT-D03R_XDE01A02 [corrected to VAT-D03R-04]
VAT-G10E-01	Powhatan Creek	Listed on 2004 List for Bacteria.	Contained in 2006 IR as ADB-AU: VAT-G10E_POW01A02 [VAT-G10E-01 for bacteria]
VAT-G10E-03	Mill Creek	Listed on 2004 List for Bacteria.	Contained in 2006 IR as ADB-AU: VAT-G10E_MIC01A00 [VAT-G10E-03 for bacteria]
VAT-G10E-04	James River	Listed on 2004 List for Benthic.	Contained in 2006 IR as ADB-AU: VAT-G10E_JMS01A06 [merged into VAT-G10E-05 for benthic]
VAT-G11E-02	Skiffes Creek	Listed on 2004List for PCBs.	Contained in 2006 IR as ADB-AU: VAT-G11E_SFF01A04 [VAT-G11E-02 for PCB in fish tissue]
VAT-G11E-03	Deep Creek	Listed on 2004 List for Bacteria.	Contained in 2006 IR as ADB-AU: VAT-G11E_DEP01A02 [VAT-G11E-03 for bacteria]
VAT-G11E-04	Pagan River	Listed on 2004 List for Bacteria.	Contained in 2006 IR as ADB-AU: VAT-G11E_PGN01A06 [merged into VAT-G11E-05 for bacteria]
VAT-G11E-05	Pagan River	Listed on 2004 List for Bacteria, DO, PCBs.	Contained in 2006 IR as ADB-AU: VAT-G11E_PGN01A06 [VAT-G11E-05 for bacteria, JMSMH-DO for Oxygen, dissolved & VDH-James PCBs]
VAT-G11E-06	Jones Creek Trib to Pagan	Listed on 2004List for PCBs.	Contained in 2006 IR as ADB-AU: VAT-G11E_JOG01A04 [VAT-G11E-06 for PCBs]

			in fish tissue]
VAT-G11E-07	Chickatuck Creek	Listed on 2004List for PCBs.	Corrected in 2006 IR FINAL as ADB-AU: VAT-G11E_CKT01A04 [corrected to VAT-G11E-07 for PCB in fish tissue]
VAT-G11E-10	Pagan River and Jones Creek	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-G11E_PGN01A06 [VAT-G11E-10 for shellfish]
VAT-G11E-12	James River-Opposite Fort Eustis	Listed on 2004 List for Shellfish.	Corrected in 2006 IR FINAL as ADB-AU: VAT-G11E_JMS01A06 [added to DELIST VAT-G11E-12 for shellfish due to DSS Administrative classify]
VAT-G11E-13	Morrisons Creek	Delisted 3.5-27 but has same ID as James River Swash Hole which is listed	Morrisons Creek (2004 ADB_AU: VAT-G11E_MRS01A00; WB_Name = James River:Swash Hole) was a portion of the DSS condemnation James River:Swash Hole, which DSS listed as open for 2006 IR
VAT-G11E-14	Upper James- Lawnes Creek	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-G11E_LAW01A00 [VAT-G11E-14 for shellfish]
VAT-G11E-15	Warwick and James	Listed on 2004 List for Shellfish.	Corrected in 2006 IR FINAL as ADB-AU: VAT-G11E_JMS03A06 [added to DELIST VAT-G11E-15 for shellfish due to DSS Administrative classify]
VAT-G11E-16	Chuckatuck	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-G11E_CKT01A04 [VAT-G11E-16 for shellfish]
VAT-G13E-03	Nansemond River	Listed on 2004 List for DO.	Corrected in 2006 IR FINAL as ADB-AU: VAT-G13E_NAN01A00 [corrected to VAT-G13E-03 for DO]
VAT-G13E-04	Bennett Creek	Listed on 2004 List for Bacteria and PCBs.	Contained in 2006 IR as ADB-AU: VAT-G13E_BEN01A04 [VAT-G13E-04 for Bacteria and PCBs]
VAT-G13E-05	Star Creek	Listed on 2004List for PCBs.	Contained in 2006 IR as ADB-AU: VAT-G13E_STR01A04 [VAT-G13E-05 for PCBs]
VAT-G13E-07	Shingle Creek	Listed on 2004 List for Bacteria, DO and pH.	Corrected in 2006 IR FINAL adding pH [VAT-G13E-07]; contained in 2006 IR as ADB-AU: VAT-G13E_SGL01A00 [VAT-G13E-07 for bacteria & JMSMH-DO for DO]
VAT-G13E-11	Nansemond River - Knotts Creek	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-G13E_KNC01A00 [VAT-G13E-11 for shellfish]

VAT-G13E-12	Nansemond River - Bennett Creek	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-G13E_BEN01A04 [VAT-G13E-12 for shellfish]
VAT-G13E-14	Shingle Creek	Listed on 2004 List for Shellfish.	Contained in 2006 IR as ADB-AU: VAT-G13E_SGL01A00 [VAT-G13E-14 for shellfish]
VAT-G15E-01-01	South Branch Elizabeth River	Listed on 2004 List for DO.	Contained in 2006 IR as ADB-AU: VAT-G15E_SBE01A00 [VAT-G15E-01-01 for DO]
VAT-G15E-01-02	South Branch Elizabeth River	Listed on 2004 List for Bacteria.	Contained in 2006 IR as ADB-AU: VAT-G15E_SBE03A06 [VAT-G15E-01-02 for bacteria]
VAT-G15E-01-04	South Branch Elizabeth River	Listed on 2004 List for TBT.	Contained in 2006 IR as ADB-AU: VAT-G15E_SBE02A06 [VAT-G15E-01-04 for Tributyltin TBT]
VAT-G15E-02-04	Broad Creek	Listed on 2004 List for Bacteria, DO and PCBs.	Corrected in 2006 IR FINAL as ADB-AU: VAT-G15E_BRO01A02 [change VAT-G15E-01-03 to VAT-G15E-02-04]; contained in 2006 IR as ADB-AU: VAT-G15E_BRO01A02 [VAT-G15E-02-04 for bacteria & PCBs]
VAT-G15E-02-05	Indian River	Listed on 2004 List for Bacteria.	Contained in 2006 IR as ADB-AU: VAT-G15E_IND01A02 [VAT-G15E-02-05 for bacteria]
VAT-G15E-03-01	Elizabeth River	Listed on 2004 List for TBT.	Corrected in 2006 IR FINAL as ADB-AU: VAT-G15E_ELI01A06 [changed VAT-G15E-01-03 to VAT-G15E-03-01]
VAT-G15E-05-02	Lafayette River	Listed on 2004 List for Bacteria and PCBs.	Contained in 2006 IR as ADB-AU: VAT-G15E_LAF01A06 [VAT-G15E-05-02 for bacteria & PCBs]
VAT-G15E-05-03	Lafayette River	Listed on 2004 List for Bacteria.	Corrected in 2006 IR FINAL as ADB-AU: VAT-G15E_LAF02A06 [VAT-G15E-05-03 (2004 list was for TBT)]
VAT-K13R-01	Tarrara Creek	Could not Find on 2004 List.	Contained in 2004 IR pg. 3.3a - 25
VAT-K27R-02	Three Creek	Listed on 2004 List for DO and Bacteria.	Corrected in 2006 IR FINAL as ADB-AU: VAT-K27R_TRE02A00 [added wording for DELIST of DO in ADB - data submitted previously with draft; bacteria remains]

70. EPA comments on the Chesapeake Bay

EPA Questions			DEQ Responses
POTOH	SAV	This parameter was listed in the VA listing but no corresponding impairment parameter was listed in the CBPO Assessment table	The POTOH segment is not impaired for SAV, but is impaired for the dissolved oxygen parameter, due to unsatisfactory levels during the summer months.
POTMH	DC DO	Not Listed in Virginia but is Impaired in CBPO Assessment	The POTMH deep channel sub-use is categorized as not assessed because CBPO did not perform that assessment according to the specifications outlined in Virginia's standards. Rick Hoffman asked that I change the classification of the deep channel for the dissolved oxygen parameter from impaired to insufficient information, so he would be the one to ask regarding greater detail about this determination.
	B-IBI	VA Listed only Segment for Belmont Bay does not Correspond to CBPO	Rick Hoffman stated that the available B-IBI results only apply to the mainstem Potomac, as we do not have enough data for the Potomac embayments to perform assessment on these estuaries. However, the estuarine bioassessment impairment noted in the information associated with assessment unit VAN-A25E_OCC03A04 (Belmont Bay) is the result of Don Smith's Coastal 2000 survey, specifically from the data collected at station 1AOCC002.62 in 2002. Either Rick or Don may be able to provide additional information if it is deemed necessary.
JMSTF	SAV	Not listed in VA IRL does not Correspond with CBPO and this Segment is Considered to be Bailey and Cattail Creeks.	James Tidal Fresh Lower failed SAV, 303(d) listed as "James River Page 3.3a-27 00442"
EBEMH	B-IBI	Impaired but B-IBI not Given as Reason.	Contained in 2006 IR as ADB-AU: VAT-G15E_EBE01A00 & VAT-G15E_EBE02A06 [VAT-G15E-01-03]
WBEMH	B-IBI	Impaired but B-IBI not Given as Reason.	Corrected in 2006 IR FINAL as ADB-AU: VAT-G15E_WBE01A02 & VAT-G15E_WBE02A00 [EBEMH-DO corrected to WBEMH-DO]
RPPMH	B-IBI	Not Listed in VA IRL.	B-IBI segment RPPMHa is impaired but the segment is listed for DO b/c of hypoxia at mouth

PIAMH	OW DO	Listed in VA IRL but not Listed by CBPO	Several PIAMH segments were previously listed for dissolved oxygen (DO), & considered to be due to stratification. The new Chesapeake Bay criteria were implemented during the 2006 cycle, per EPA III. The Open Water 30 Day Dissolved Oxygen criteria were acceptable, however there were insufficient data to assess the other criteria. Therefore this segment remains listed for the DO impairment. The TMDL is due in 2014.
MPNTF	SAV	Not Impaired According to CPBO but Listed in VA ILR under the Mattaponi River segment 10092 is This the same Segment?	10092 is the York Mesohaline SAV impairment - a small portion of the Mattaponi lies within the YRKMH seg; MPNTF is not impaired for SAV
PKMOH	B-IBI	Impaired but no VA ILR Listing Under PMNOH.	Listed under Pamunkey River 10085 page 3.3a-98 (Note: PMKOH)
PKMTF	OW DO	Impaired but VA ILR Listing not Under PKMTF.	01773 page 3.3a-98 is the PMKTF Open Water DO impairment; should be listed under PMKTF, not PMKOH
YRKPH	B-IBI	Impaired but Not on VA IRL for Chesapeake Bay Segment.	Contained in 2006 IR as ADB-AU: VAT-F27E_YRK01A00 [VAT-F26E-01]